

Integrating Productivity

Cross-border Regional Integration and its effects on
Productivity in the Oresund and Vienna-Bratislava Region

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Abstract

The cross-border regions of are often described as the heart of European integration, creating a unique platform for integration. Yet, many regions are struggling with economic disparities and low regional productivity. The levels of productivity in a region are closely linked to the size of a market. Could increase integration increase the levels of productivity in European cross-border regions?

This study investigates the level of integration through a system of indicators of a regional integration (SIRI) in a cross-border setting. Analysing the preconditions in of integration and how these preconditions have affected the productivity in the two case studies, the Oresund region and the Vienna-Bratislava region.

Showing that despite cross-border cooperation has the Vienna-Bratislava region drastically increased its productivity, following the Slovak entry in the European Union. However, the region still suffers from vast differences in economic development and in political structures. The Oresund region has almost the opposite problem, with strong cross-border cooperation and low levels of productivity.

Key words: Cross-border Regions, Regional Productivity, Vienna-Bratislava, Oresund, System of Indicators of Regional Indicators,

Words: 19 178

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1 Introduction

Globalisation is a key factor for understanding the growing economy of today. Growing markets are creating bigger trade zones, and free trade negotiations such as Transpacific Trade Agreement (TPP) and Transatlantic Trade and Investment Partnership (TTIP) are likely to propel this development even further. The increase of global economic exchange has also created an increase in regional integration. Political issues linked to opening borders are of increasing importance for the ‘future of international institutional architecture’ (De Lombaerde & Van Langenhove 2005: 1). The competitive advantages created when opening up for more trade are critical for a healthy economy, and this is widely agreed upon, yet many economists uphold that in order to ensure competitive advantages in the global economy, one has to focus on the local issues, such as ‘knowledge, relationship and motivations’ in the fields that other competitors cannot match. This essentially signifies that an argument for regionalisation is the importance of local and regional resources to obtain global competitiveness (Asheim & Isaksen 2002: 2).

In the European Union today, more than 185 million EU citizens, or one third of the population, live in regions bordering another EU state or an external border (Baltá Portolés 2015: 8). Yet, there is very little research made on a European level on cross-border regional integration. In 2000 just around 500 000 Europeans were estimated to commute to work across national borders. A number that has increased with 26 percent between 2000-2009, to approximately 1 million citizens (Nerb, 2009: 25).

The European regional cross-border cooperation is often described and seen as the ‘small scale symbol of European integration’. Hans-Gert Plötrring, former president of the European Parliament stated that:

“It is in the Euroregions where the European Union is brought to life”.
(Baltá Portolés 2015: 13)

The mobility of people, goods and services are the foundation of the European Union, yet in the cross border region, these foundations are put to the test (Nilsson 2016: 26). Many of these areas do not have the full authority to facilitate the regional integration through legislation. Instead, many cross-border cooperations have to lobby national governments to enable further harmonisation.

Yet, many researchers claim that one of the biggest challenges in the future for the European Union is to decrease the differences in regional disparities, while also increase economic growth. Many regions in the European Union are lagging

behind in the economic development, creating disparities also within national states. Especially the border regions are struggling with economic issues. Could even more open borders of European Union be the solution to these regions challenges?

Since, the issue of productivity is closely linked to the size of the market. The bigger the market a company functions in, the more efficiency is required in the production. Yet, in many member states the level of productivity varies largely from one region to another. When the market becomes larger, the production of companies will become more efficient due to economies of scale. Expanding the cross-border region, solving obstacles of integration may thus create economic possibilities.

Yet, the research in the area of cross-border studies is limited, both in terms of integration and especially in terms of productivity. Since the cross-border region have higher obstacles of trade and labour market expansion. Can a lower level of productivity be seen as a symptom of border regions and lack of integration? Can metropolitan border regions come to terms with a limited integration and still maintain a higher level of productivity, or is it necessary for a border region to integrate in order to get higher productivity?

This study aims to fill some of the existing holes in this field of research.

1.1 Aim

The main aim and focus of this study is first and foremost to investigate if the regional productivity in cross-border regions can be linked to the level of integration, or more specifically the lack of integration. Many theories in the field of productivity claims that expanding markets is a necessity for increase in the levels of productivity, thus a more integrated cross-border region would naturally lead to a more productive region, or does the border obstacle make it difficult for a cross-border region to become more productive? The overall aim is to investigate these issues. Integration and the process of studying integration can be seen as a tool to investigate these issues and will be applied and analysed in terms of the level of productivity, later on in the study. This will be done through case studies, where the theoretical and operationalization of integration and productivity theories will be applied to the empirical background of the specific cross-border regions.

In regional integrations studies, the setting of European Union cooperation is particularly interesting, given that there are strong ambitions from the Union to harmonise legislation and economic structure within the Member States.

This creates a unique platform for increased cross-border regional integration. If the remaining border obstacles are abolished, also on a national level, this could have a great impact on the border regions and potentially also for the productivity in these regions. However, given that there is a limited amount for research on cross-border regions in the EU (Hall, 2008: 427); in order to fully examine the process of integration in the cross-border setting, a system of indicators of regional integration (SIRI) for cross-border regions needs to be established. The aim of the system of indicators is to investigate the cross-border regions from an interdisciplinary perspective, incorporating the economic, geographical, legal and political aspects of regional integration into a cross-border setting.

1.2 Research Question

The aim of this study can be summarized into three research questions:

- *How can the relationship between regional integration and productivity be conceptualized in a cross-border setting?*
- *How can critical preconditions for regional integration in a cross-border setting be analysed?*
- *How/in what way/to what degree have development in regional integration affected productivity in the two cross-border regions: The Oresund region and the Vienna- Bratislava region?*

The three questions all have a different focus: the first has a theoretical focus, the second aims at the methodological hypothesis of the system of indicators, as well as stresses the implications this may have on productivity. The final empirical question aims at monitoring the effects of potential changes in integration, and how it will affect the levels of productivity.

2 Theory - Analytical framework

This chapter will focus on the analytical tools, theories and definitions that will be used throughout the study. For practical and research purposes the main concepts of the study will be defined and theorised, based on previous research in theory formation of productivity and regional integration. The majority of the chapter will focus on the theorisation of regional integration and productivity. Given that the theorisation of regional integration is a crucial part of the creation of a system of indicators of regional integration in cross-border areas, and thus also for the methodological chapter, the indicators selected in this chapter will later on be used for the system of indicators.

There is also an initial section on the definition of cross-border regions. Since the study of cross-border regions in this sense is a complex area of study, the need to further concretize and develop existing discourse and definition are of great importance, in order to be able to consider what factors are empirically, methodologically and theoretically important. This is especially important since the selection of cases later in the study will be based on this definition.

Furthermore, the theories on regional integration will be adopted somewhat, in order for them to function within the scope of a cross-border region. In this chapter the theoreticalisation of the indicators of regional integration are presented.

2.1 Cross-border region - a definition

In order to start off this study, there is a need for a definition of the concept *cross-border region*. Given that there is a wide scope of interpretations of the concept in terms of cross-border cooperation and their administrative set-ups, type of public authorities and so on, it is necessary to specify and accommodate the differences in cross-border cooperation.

The definition that was adopted by the European Council in 1972 classifies a cross-border region as ‘characterised by homogeneous features and functional interdependencies because otherwise there is no need for cross-border cooperation’ (CoE 1979: 29). The European Council refers to a ‘trans frontier region as a region, inherent in geography, history, ecology, ethnic groups, economic possibilities and so on, but disrupted by the sovereignty of the

governments ruling on each side of the frontier' (Perkmann 2003: 156, CoE, 1995). These definition of a cross-border region, like the ones made by the Council of Europe, can be linked to the concept of *functional regions* (Perkmann 2003: 156).

Functional regions are the notion that regions are created on the basis that certain market transactions, extra-market information and knowledge transfers are less costly if they are performed within the functional region. Given that the interactions have a higher frequency within the borders of the region rather than outside of the functional region, the agglomeration of activities is what defines the region. The cluster of activities is at the core of this perspective. Since, all types of interactions come with an interaction cost, a functional region is defined and determined by the where the cost of interactions severely increases (Karlsson & Olsson 2015: 4). The most important notion of functional regions is the link to spatial planning, since it gives incentive for policy-planning within the regions, for a functional region, that is also a cross-border region. This emphasise the need for cross-border cooperation and gives incentive for a platform for intra-regional decision-making (Perkmann 2003: 156).

However, the theoretical perspective of a functional region is also, to some extent, presented by the Council of Europe, even though it narrows the scope somewhat as it refers to a limited scope of spatial planning. But a cross-border region is not only an 'action space' but also an action unit. Thus the region is not only defined in functional terms (Schmitt-Egner 1998: 37). Many previous studies on cross-border regions have made a much wider definition to fit the object. Where the regionness is understood in terms of outcome in a social construction process. Where the level of 'regionness' is defined by how strong the social construction is, or the sense of 'belonging' to the region. The region is then outlined by its cooperation with other border regions (Perkmann 2003: 157). Another similar example is Lundquist and Trippl, whom defines a cross-border region as "an area consisting of adjacent territories belonging to different nation states" (2015: 3). By creating these wide, almost pointless definition, the researcher can cover larger areas as well as cover basically any region that are bordering a different nation state.

This study will investigate and focus on the notion of regional integration and the role it plays in terms of productivity. Thus, emphasis will be on the spatial policy-planning and on the agglomeration of activates and metropolitan areas. Given that this needs to be performed within a statistical measurable area, the definition will have to be a combination of the social and economic construction. In order to avoid a too wide definition of a cross-border region the social and economic definitions will be combined. Creating a definition that fulfils the full aim of this study, yet also can be used in future studies. A cross-border region is defined as:

“a more or less institutionalized collaboration between contiguous subnational authorities across national borders” (Perkmann 2003: 156) and *“is characterised by its agglomeration of activities and by its intra-regional transport infrastructure and established economic interaction networks, facilitating a large mobility of people, products and inputs within its borders”* (Karlsson & Olsson 2015: 4).

2.2 Regional Integration

The term ‘integration’ implies that two parts are brought together into a whole, it could also be the process of actors coming together. Thus, regional integration has a quite straightforward meaning of bringing two or more regions together (Balassa 1962: 2). The process of integration can be seen as opportunities for increasing and intensifying interactions between neighbouring areas, as well as the willingness for cooperation (De Boe & Grasland 1999: 10). Some academics also argue that regional integration is the process of reducing structural differences between territories, yet can also be described as a pattern of interactions and control between different (social) spaces and the maintenance of recently created linkages (Lee 2009: 397-399).

Something that needs to be emphasised is the difference between cooperation and integration. Cooperation is the actions aimed at decreasing the level of discrimination, and can take different forms such as trade agreements of various types. Integration on the other hand refers to the abolishing of all forms of discrimination, an example of this is free trade agreements and abolishing trade barriers fully (Balassa 1962: 2). Cooperation can be seen as the beginning of a process of integration and is in many ways a ‘gateway’ to integration. By making this distinction the abolition of discrimination is put into the main focus of ‘Regional Integration’, thus giving the full region the same opportunities and responsibilities.

2.2.1 Categorizing integration

When categorising the different perspectives and actors involved in regional integration, there are several ways of defining the variables. Some of the most common ones will be presented in the coming sections. Most of them have a similar structure of ‘dimensions’ in the theories, yet there is still a number of different approaches and variation to their structure.

One theory is based on proximity and the difference categorisation of *proximity*. One of the most common main categorisations, make the division of integration into: *organisational proximity*, the closeness of the institutional or

“organising” actors, and *geographical proximity*, referring to the spatial distance between the actors, in an absolute and relative meaning (Boschma 2005: 63). In a study conducted by Boschma identifies five dimensions of proximity: cognitive, organisational, social, institutional and geographical, to demonstrate that small fluctuations in distances may be harmful for the “learning and innovation” in territories or in organisations (2005: 71). Another study by Lundquist and Trippel focus on the concept of “regional innovation system”, that emphasises the flow of information and technology to citizens, enterprises and institutions in a specific region. It also measures the interaction between these entities in terms of their economic, social, political and institutional relationships. In the study, they apply the regional innovation system on cross-border cooperation, which Lundquist and Trippel claim are “the last and most advanced form on regional integration” (2009: 2).

Most of the discourse on proximity studies, identify three main categories relevant for regional integration analysis, that are also relevant for the analysis of cross-border regions: *physical, relational and functional distance*. These three categories focus on geographical distance (physical), dissimilarities in policies, norms, laws, institutions and business (relational), and differences in innovation and education (functional) (Boschma 2005: 63, Lundquist & Trippel 2011: 1-2, Markova 2014: 13). These categorises that will be used in this study will focus on these areas, however will be divided into more area specific categories.

Cultural and Social Integration
Institutional and Policy Integration
Economic and Industrial Integration
Infrastructural and Spatial Integration

One of the most “used” indicators or proximities of integration is *Relation Distance*, probably since it covers almost all aspects of integration in terms of regulatory focus, institutional structures as well as the cultural and social aspects such as identities, norms and languages. In this study, these will be divided into two sections: *Institutional and Policy Integration* and *Cultural and Social Integration*. Boschma argues that these are all interlinked and thus analyses and investigates them in one section since social actions are to a large extent embedded in institutional environment (Boschma, 2005, 67-68). The main differences between cultural and social integration and institutional and policy integration is that in the latter focus is on the formal integration while the cultural and social integration investigates the informal structures. Thus, for the scope of this study they will be presented as two separate parts, to capture the full extent of each indicator, so that the two sections can be, analysed separately and in one section.

This also applies to the categories of ‘Economic and Industrial Integration’ and ‘Infrastructural and Spatial Integration’, since especially labour mobility and commuting are part of both categories. They will be presented in the spatial integration and then analysed together with the economic integration in the analysis.

In the study of the integration process, many academics divide the integration process into two types of integration, *the negative and positive integration*. The negative integration implies that there are actual barriers that needs to be removed for the parts to establish contact on an institutional level and create economic transactions. While the positive integration refers to the creation of common policies, institutions and norms. Generally, one can say that less ambitious integration projects usually imply negative integration while, positive integration is usually more substantive, focusing more on issues such as deregulation. Yet, integration can usually be described as an interplay and mixture of the two types. Since a higher level of negative integration is difficult to conceive without some level of positive integration (Jerneck 1999: 175, De Lombaerde & Van Langenhove 2005: 9). However, this way of defining integration can be quite difficult, since the process is not entirely black or white. It is usually good to see integration as a mixture of both negative and positive integration (De Lombaerde & Van Langenhove 2005: 9).

Another way of categorising integration is presented in a study made by Lindquist and Trippel: the level of integration is here categorised as a three stage model: *Weakly integrated, Semi integrated or Strongly integrated*, based on the levels of proximity. Lindquist and Trippel aims to restrict the discussion “to the preconditions, driving forces and barriers for the emergence of a common innovation space” (2009: 6). This type of categorisation can fill a purpose since it provides an attempt of indexation and ranking system in terms of integration. Such a categorisation also enables regions to be compared in a more manageable manner. To create an overview, the level of integration will be categorised with a short comment, hopefully this will make the empirical section more manageable.

2.2.2 Integration in Cross-border Regions

Cross-border regions can be described as a collision of dissimilar economic structures, social and cultural environments, creating not only actual borders but also borders for communication and diverged regional development paths, acting on respective side of the borders (Krätke 1999: 634).

In each cross-border region, different parts of the region can often show a variety of economic histories, institutional set-ups, different political visions and structures, as well as technological, cultural and social dissimilarities. These differences are what gives cross-border regions their potential to create new

synergies and complement each other to promote and generate cross-border growth. Yet, it is also in these differences that the cross-border barrier exists (Lundquist & Trippel 2009: 1). One example of these challenges is the portrayed in a poll done by Eurobarometer in 2015 says 57 % of the respondents from cross-border regions all over Europe, that language difficulties, are in their opinion, the top obstacles for cross-border integration (Eurobarometer (1) 2015: 9).

When investigating the integration in cross-border regions, the challenges are naturally of a different nature than when investigating integration within a EU member state. Some studies show that the governmental structures and functions in terms of urban social, political and spatial facts of the regions, do not mirror the importance of the cross-border regions. Many larger regions with significant population and economies, does not have influence over policy areas that are hindering their development. The issue of peripherality, is a well-known problem in this field of study (Lepik & Krigul 2009: 33). This problem will be further highlighted in the following sections.

2.2.3 Economic and Industrial Integration

One of the most important argument for the development of regional cooperation and integration is the positive effect that it has on the local economy. If the definition of 'regional integration' can, thus be described as quite clear-cut, the term 'regional economic integration' is not as unambiguous in its definition, despite the increasing importance of the topic. One of the most influential academics in economic integration is Bela Balassa. Whom in 1961, described economic integration as "a process and a status of affairs", and regards it as the abolishment of discrimination between economies (Balassa 1961:1). In other studies, the definition is extended to focus on global trade agreements as well as the regional economic interplay within national borders (Scott & Stroper 2003: 192, Krätke 1998: 631). Looking at the European Union, the majority of these rights are protected within the framework of the Schengen Agreement. A Member State can for example not discriminate companies from other Member States in their legal system. However, in a cross-border setting, one side of the border benefits from cooperation by taking advantage of income and wage differences between neighbouring territories (Krätke, 1999).

Another issue of cross-border regional integration, is the barriers of integration that exist. In order for the theories on agglomeration economies to function, people need to move in the region, if there are borders for the movement of labour, the theories will not be as well-defined. Since migration is not only hindered by actual laws and policy, that forbid or restrict workers from moving to one side of the region to another, but also from various social, psychological and economic obstacles: wage insecurity, language, loss of seniority and so on, may be reasons enough not to move, even within the proper region (Balassa 1961: 90).

These are features of cross-border integration that needs to be taken into consideration when applying these regional theories to a cross-border setting. The levels of integration will most likely not be as clearly defined.

2.2.4 Institutional and Policy Integration

The classification of institutional and policy integration will be focused on dissimilarities in policy, regulations and the institutional obstacles for cross-border integration. Looking at the political institutions, organisation and forums in which the cross-border integration and cooperation will be discussed. The political processes and means of integration are in many ways the solution for other forms of integration, such as in the economic sector. Thus, the political structure of the region can be said to be one of the most important facilitators or obstacles for integration (Balassa 1962: 7). However, these structural differences, such as levels of decentralisation in policy-making can become obstacles in integration if there is a multiple amount of actors of different levels that needs to be incorporated. Making the cross-border cooperation more difficult to create.

It also includes differences in legal system and implementation, since this study focuses on cross-border regions within the European Union. The levels of implementation of the legal agreements also have a key role to play in the integration, both in terms of formal and informal rules. Shared laws and rules reduces initial uncertainty, since standardisation of routines automatically will lower transaction costs (Marrocu et al., 2013: 7). This study will focus mainly on the formal bonds of cooperation and legal framework implementation, to investigate the general preconditions for cross-border cooperation.

2.2.5 Cultural and Social Integration

When looking at the integration of a region, especially in a cross-border setting, an important scope of the actual integration is not only what can be counted in terms of figures and statistics, but also on a cultural and social level. How much 'regionness' does a specific region have. This type of bonds can exist due to shared natural resources, language or simply similar culture values and social bonds formed by history (Hettne & Söderbaum 2000: 13-14). Despite the surrounding conditions of integration, if there for example are significant borders dividing two areas, these type of structures play a big role in keeping a sense of 'identity' to one another in the border areas. Hence, the barriers for cooperation are relatively low, and are often taken at an early stage of integration. Yet, these type of shared cultures and values, especially in terms of shared historical background, can also explain the lack of or the limited amount of cooperation. Given that there may be an underlying conflict that avert the integration or cooperation. A certain level of heterogeneity is an important feature of successful

integration. The threshold of cooperation will decrease if there is already a sense of informal bonds (Lundqvist & Trippel 2009: 3).

2.2.6 Infrastructural and Spatial Integration

The theories on regional integration, is essentially the study of the growth in geographical and economic areas. The regions become denser in terms of economy and social constructions. However, the main tool to actually facilitate the shorter distance is through infrastructural changes and investments (Andersson 2013: 6).

The labour market will be, as previously mentioned, analysed and explained in the economic sector. Yet, the commuting streams, being an essential part of the spatial planning, will be a part of this section. An important first step of the regional integration is infrastructure and the ability to move across the borders (Lundqvist & Trippel 2009: 1). Building transportation and communication (railway, high way, postal service etc.) are often associated with high investment cost, and even if the cost decline over time, the cost of not investing in infrastructure is often higher. Since the building and expansion of infrastructure in a region are often connected to economic clustering, specialization and agglomeration benefits from it (Scott & Storper 2007: 194). By improving the means of transportation within a region, the economic density of the region changes. Companies and individuals will have a shorter distance to travel, improving the transportation networks in the region, and reducing the transportation and transaction costs. Connecting both individuals, companies and expanding the labour force. Research have showed that there is an upper limit to daily commuting. High skilled labour are usually not prepared to commute more than an hour every day. In general, the maximum is between 40-60 minutes. Thus, an employer has a wider selection of employees, as the regions is expanded (Andersson 2013: 6-7).

2.2.7 Security

The issue of regional security is often portrayed as one of the most prominent indicators of integration, especially in the post-cold war era (Held et. alt. 1999: 101-102, De Lombaerde & Van Langenhove 2005: 19). Since this study has its main focus on European Union Member States and regions that already have a fairly high level of integration, the issue of security, will not be considered for this study. Former security threats that may be important from a historical perspective, will be considered when discussing institutional integration and historical background.

2.1 Productivity

As this study aims to investigate what impact the preconditions for cross-border regional integration have on productivity, it is important to investigate the theoretical background of productivity and determinants of regional productivity growth. This section will provide such a background and theoretical perspective. Since there is such a vast amount of studies of productivity, this theory chapter will focus on productivity theory in terms of market expansion in a regional setting.

When it comes to the levels of productivity in cross-border regions, there are few previous studies made. When it comes to regional integration, there are a few studies made, that a theoretical framework could be based on. Thus, for the scope of theorisation of productivity, this study will rely on the studies of regional integration.

2.2 Regional Productivity

There is a vast amount of theories on productivity and ways to measure and define productivity in. At a basic level it can be quite straightforward. By using data on gross national product and dividing it by the amount of worked hours in any member states, some academics may find it a bit blunt to use as a measurement, but this is still the most commonly used method. This can also be applied to gross regional product as well as individual companies and sectors. Hence, productivity can be measured both on a micro and on a macro level (Andersson 2013: 6). There is a number of variables and determinants that can explain an increase or decrease in the level of productivity. Yet, many of these theories show that a short term increase, and a long term increase of productivity is harder to predict. Something that can be linked to the fact that short-term causalities are easier to prove than long-term causalities in the case of productivity. One such example is the theory on market expansion. It states that the level of productivity depends on the size of the market (Balassa 1961: 108, Andersson 2013: 6). An increase in the size of market does not only lead to the possibility of increased productivity, but also enables exchanges of technology between industries, leading to a more advanced technological development and increased specialisation (Balassa 1961: 112, Andersson 2013: 9). However, since technology and innovation is perishable, the expansion and development needs to be constant in order to increase the productivity.

One of the most esteemed researchers on economic integration and productivity, Bela Balassa argues that, in order to investigate the productivity of a product, sector or just a micro perspective in general, the markets can be broken

down into regional or local markets (Balassa 1962: 107), a particularly relevant observation for this study.

2.2.1 Regional Productivity in the European Union

The need for a high level of productivity is central for the economic development of any region. Still, the level of productivity and the stage of the economic development can greatly fluctuate between European countries and regions, also when looking at regions within the same national state. In many European countries are these regional disparities one of the main economic challenges that they face and will be facing in the coming years. These differences are also reflected in the level of income per capita and total factor productivity in the different regions. Within the European Union there has been a large focus, in terms of policy measures, on the differences in the GDP between member states and regions. A substantial portion of the European Union structural funds and investment loans have been allocated to facilitate economic growth. (Fagerberg & Verspagen 1996: 432). Given the importance of the issue, many researchers have studied possible determinants of regional productivity. However, the main determinants of regional productivity growth in Europe can be summarised into five areas and points of departure: level of education in the region (skills), research and development funding (innovation), capital intensity and infrastructure (capital), labour mobility and business dynamics (allocation), agglomeration (location) (Bulavaskaya et. al. 2014: 1-2, Beugelsdijk et. al 2015, 2-3). Thus, the level of productivity can be understood in terms of how well the labour market functions, the amount of investments is made into a region, both in terms of political investments (infrastructure) but also amount of businesses. Many of these areas are associated with the expansion of regions.

The need for growth of productivity is central for the economic development of any region. Still, the level of productivity and the stage of the economic development can fluctuate vastly between European countries and regions, also when looking at the regions within the same national state. In many countries this is one of the main economic difficulties that they face in the coming years. These differences are also reflected in the level of income per capita and total factor productivity in the different regions. In the case of regional development, many countries have vast differences in stage of development between regions. This is often reflected in the total factor productivity and thus also in income per capita (Bulavaskaya et. al. 2014: 1-2). Yet, when it comes to regional productivity, it is often argued that the main changes do not take form across regions, instead conform across different sectors. Thus, that regions that are specified on certain production and have similar structures also have the same level of productivity (Esteban 1999: 3-4). However, many studies claim that a region needs a large urban agglomeration to become productive and many studies have also proved that one of the key issues in terms of productivity is possible agglomeration

benefits that can be generated in a certain region (Ahrend & Schumann 2014: 22, Esteban 1999: 3-4). The increase in production can thus be linked to the amount of people living in a region and how densely populated the region in question is. These types of issues are also according to theories of production closely linked to productivity inequalities. Especially since denser populated areas also often have a higher level of capital intensity (Ahrend & Schumann 2014: 22). An issue that especially the less densely populated areas in Europe are struggling with, increasing the need for infrastructural investments limiting the proximity.

3 Method

The aim of this study is to look at two theoretical perspectives, regional integration and regional productivity. This will be a methodological challenge to combine the two and to further develop the theoretical spectrum of the two theories. Thus, the most important part of this section is how to examine the correlation between the two indicators and if there are any conclusions that can be made. Here the operationalization of theory and methodological construction have an important role to play.

Since this study will have a qualitative methodological perspective, this methodological chapter will start with a section on the advantages and hazards with this type of study, as well as a full review of the research design of the study.

The operationalization of this study will be largely based on a discussion paper written in 2005 by Philippe De Lombaerde and Luk Van Langenhove, in which they discuss potential ways to measure Indicators of Regional Integration (2005: 1-2). Since many of the methods that they are suggesting are too wide to fit the aim of this study, they will be somewhat altered, yet will still be based on the theories and methods presented by De Lombaerde and Van Langenhove. More on this in the section on Operationalization.

The case studies selected will be presented early in the methodological chapter since the creation of the SIRI will to some extent be based on the preconditions of the cases that will be scrutinized in this study.

The research ‘puzzle’ of this study is again:

- How can the relationship between regional integration and productivity be conceptualized in a cross-border setting?
- How can critical preconditions for regional integration in a cross-border setting be analysed?
- How/in what way/to what degree have developments in regional integration affected productivity in the two cross-border regions: The Oresund region and the Bratislava-Vienna region?

This chapter will mainly focus on the more methodologically motivated second question.

3.1 Research design

Given the aim of this study, to further extent the system of indicators to the cross-border setting, as well as explore the preconditions of integration and monitor their changes and impact on productivity, the methodological outlook will take its outset from several points of analysis. However, the research design will be a case study, with a most similar systems design. Highlighting and comparing two of the most similar regions, in terms of the cross-border region definition in the European Union, and in what way their individual integration process has affected the productivity in said regions.

In many cross-border settings there will be an asymmetrical relationship in the border region, giving parts of the region economic and/or political superiority (Krätke 1998: 632). In the two selected cases, there can be said to be an asymmetrical relationship, particularly in terms of size, both from an economic structural perspective but also from a demographic perspective. The size of the population on each side the borders differs notably (ESPON 2011: 31). The difference in economic size, makes the two cases, interesting also from a perspective of productivity. By studying two comparable cases with relevant and noteworthy qualities for this type of study, it will be possible to get a further insight into the exploration and monitoring of obstacles of integration in cross-border regions, and their effect on productivity. Making it easier to do generalisations that may be applicable to other similar cases in cross-border settings.

Also by ensuring that the cross-border regions have a similar regional structure, in terms of geography, the amount of extraneous variables will be as constant as possible. However, it need to be stressed that in a European union setting, there is not a single cross-border region that is identical to another (Anckar 2007: 389-390). Thus, in some areas the two selected regions can be said to be a most different systems design. This will be explained more in the sections: Case selection and Case limitation.

The identification of the system of indicators will be done in this chapter. While also creating a basis and a starting point for the coming analysis and empirical chapter. The definition of a cross-border region will be used to identify and select two comparable cross-border regions (see. 'Cross-border definition'). When studying a fewer amount of cases, the importance of validity in conceptual framework increases, especially since this study also focus on the theoretical reasoning and theory development of regional indicators.

3.2 Case Selection

There is a wide selection of cross-border regions in the EU, many of the regions have also started cooperation to facilitate the coordination, but also to allocate more EU funding to the regions. This study will be focusing on two cross-border metropolitan regions, the Vienna-Bratislava Region, the capitals of Austria and Slovakia, and the Oresund, in Southern Sweden bordering to Denmark, these regions have many similarities but also differences. Yet, are characterised by, the previously mentioned, cross-border definition:

“is characterized by its agglomeration of activities and by its intra-regional transport infrastructure and established economic interaction networks, facilitating a large mobility of people, products and inputs within its borders” (Karlsson & Olsson 2015: 4).

One of the similarities of these two functional regions is that they had very critical events that started their integration process, the Oresund with the construction of the Oresund Bridge in year of 2000, and Bratislava-Vienna with the fall of the Iron Curtain and the Slovak membership in the European Union in 2004. Another important feature of these two regions is that they both have two large cities on one side of each border, with similar spatial and geographical structure. Since in both regions, one of the cities have a stronger economy and thus a stronger ‘pull-factor’ than the other. The fact that the regions already has a geographical proximity, between the two main cities, creating natural spatial possibilities as well as economic gains of cooperation (Tatzberger 2008: 109).

Similar to many other cross-border regions in Europe, have the border fluctuated over time, and both the Oresund and Vienna-Bratislava region have been part of the same nation state. Thus, both of these regions have similarities in the potential cooperation, yet have a very different structure in terms of socio-institutional, political, cultural and historical perspective. These differences make them suitable for a critical analysis of the cross-border integration obstacles in general (Lundquist & Trippel 2009: 2) and their differences in economic structure makes them appropriate for generalisations regarding the effect cross-border integration has on productivity. The ability to make generalisation from these cases are especially important, given that this study aims to develop the theories regarding regional integration.

3.2.1 Case Limitations

Since the Oresund region did not become a fully functional region until 2000 when the Oresund Bridge/tunnel was finalized. The starting point of this study will be the year of 2000, also for practical reasons, since this also the starting date for many of the statistical databases that will be used in the empirical section later.

The functional region of Vienna-Bratislava also includes the Hungarian city of Győr, however this part of the region will not be included for several reasons. The first is the lack of data, there is a shortage of statistic material in this area of the region, which have lead other studies to exclude it as well, such as the OECD Territorial Review of the area (Patti 2016: 10, OECD (2) 2003: 11).

3.3 Case Study Limitations

The main critiques that can be raised against this case study is first of all based on case selection biased, followed by the difficulties in pin-pointing potential underlying variables. As a researcher to select cases based on previous precognition, creates some difficulties, as there may be important underlying variables that are wielded or ignored due to initial biased. Since this case study also has two individual cases, there may also be an uneven amount of prior knowledge.

Another difficulty is to select the comparable cases. Since it will never be possible to select two identical cross-border regions in Europe, even in terms of economic and legal similarities, there will always be some differentiating challenges (Anckar, 2007: 389-390). This is where the challenge of this thesis is but also the importance of it. Cross-border regions are very difficult to study, given the relatively low amount of statistical research etc. This is also reflected in the fairly low amount of research put in to find a SIRI on Regional integration, even less can be found on cross-border regions. Since the material will be harder to evaluate, given that it is often two separate states proving the material. This is the reason why in thing study, mostly material from the OECD and Eurostat have been used. To make sure that its similar in all of the regions and to make the regions as comparable as possible.

3.4 Operationalization

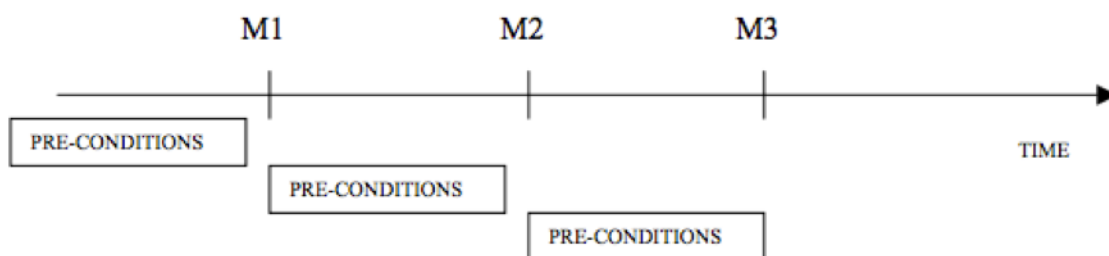
The operationalization is the process of which the analytical tools will be applied to the empirical study, in this section, the method of operationalization, selected for this study will be presented. Key in this section is to maintain a high level of validity and reliability, so that the theoretical definitions remain intact.

From a methodological perspective, the most difficult part is to measure the outcome or effects of regional integration. Yet, from an analytical perspective, this is also the most important part, since this will enable further analysis within the study's aim to investigate and analyse the levels of productivity in the two cross-border regions.

As previously mentioned will the main methodological method that are used in this study be collected and inspired by De Lombaerde and Van Langenhove's discussion paper from 2005, in this study the measuring of "Pre-conditions in phased integration processes" (2005: 17) De Lombaerde and Van Langenhove are referring to "forward-looking" variables, that measure the feasibility and effects of future integration agreements. In this model the changes in integration variables can be analysed.

With this approach the integration variables are portrait as a 'phased process', also enabling an ex-ante and ex-post approach within the same process (De Lombaerde and Van Langenhove, 2005, 16-17). The, scientist suggest that the sue of the model should not be static and that a possible input of this model could consist of "pre-conditions of integration". Thus, the inputs of this model will consist of the variables of the SIRI in a cross-border region, that will be presented in the next section (1.4.1). The outputs that will be considered:

3.4.1 Figure 1 Pre-conditions in Phased Integration Processes

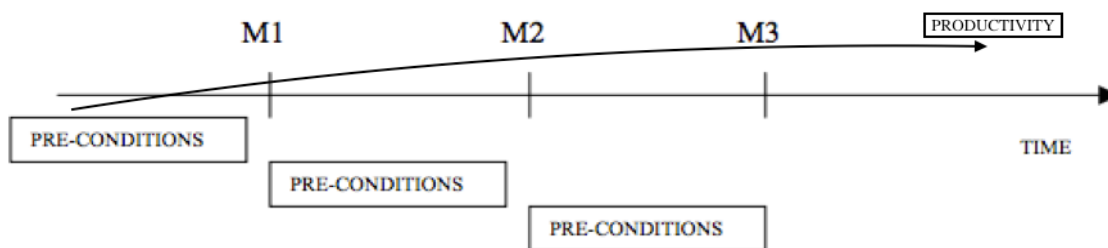


Mi: critical moments in integration process

(De Lombaerde & Van Langenhove 2005: 21)

The model by De Lombaerde and Van Langenhove (Figure 1), investigates changes in the integration process, as changes in *preconditions*. By preconditions, De Lombaerde and Van Langenhove are referring to the pre-conditions of integration, thus, what level of integration the region in question is at. The critical moments in integration changes the ‘precondition of integration’, for example, with new infrastructure or a trade agreement. In this study the ‘preconditions’ are referred to as ‘indicators of integration’ and ‘the critical moments in integration process’ will be defined as large changes in these indicators.

3.4.2 Figure 2 Pre-conditions in Phased Integration Processes as Changes in Productivity



Mi: critical moments in integration process

(based on De Lombaerde & Van Langenhove 2005: 21)

The second graph shows the method on which the study will be operationalized and on which the final aim of the study will be investigated. As seen in figure 2, the level of productivity, in the cross-border regions will be compared to the changes in the indicators. An increased level of productivity can, in a functional way of describing integration, be seen as an output of the changes (input) (De Lombaerde & Van Langenhove 2005: 21). Thus, this model will investigate if changes (Mi) in the regional integration indicators or preconditions of integration, have any impact on the levels of productivity in the cross-border regions, both in the full region, in each of the bordering cities and a comparison between the two cases will also be made.

First the main scope of the integration will be presented in the empirical analysis of the cases. Then possible changes in the indicators and SIRI will be investigated, during the specific time period (2000- 2013). These changes are then compared to the level of productivity in the region.

There will be no particular judgement of the changes in the preconditions for integration indicators. Labelling them into different models or mechanism, such as positive or negative, progress or decline. Instead, this will be analysed from a

perspective of productivity. Is there a change in productivity ex-ante or post-ante this specific event. Research in this area needs to take the full perspective into consideration for the full scope of European integration, thus should one be careful when labelling events, actions or effects (De Lombaerde et. alt. 2008: 45).

3.4.3 The Use of Process-tracing

When it comes to studying the implications that integration have on productivity in cross-border regions the method used to analyse this will be *process tracing*. The traditional use of the process tracing theory is mainly applied one a single case, investigating the event of an observation or variable (X) and the process that lead up to a specific outcome (Y) or vice versa (George & Bennett 2005: 206). This is best demonstrated as:

$$\begin{aligned} X &\rightarrow Y \\ \text{Or:} \\ X &\leftarrow Y \end{aligned}$$

The use of process tracing will be applied to the process of integration, investigating the changes in regional productivity. Here the variables of the SIRI in a cross-border region, will act as variables and the potential outcome will be the regional productivity. However, this study will not focus on the individual turn of events or actors that are characterises process tracing. The best description of the use of process tracing in this study is:

→

One can clearly see that this is not the traditional way of using the method. Yet, given that the research design does not have a specific outcome or observation that the study focuses on, it only investigates the patterns and development of integration and productivity, the outcome of which is unclear at the starting point of this research, the use of the full process tracing model is not possible. However, since process tracing aims to ascertain the causal process, where independent variable(s) are linked to the outcome, this part of the method can be applied to the development of cross-border integration, and its effects on productivity.

This study is also investigating more than one case, through which causal paths that form a specific outcome can potentially be traced (George & Bennett 2005: 207). Since the ambition is that this study can be applied to other cross-border regions, not only in terms of theory development but also for investigating the levels of regional productivity, this is a very important feature.

Another objective of the case studies is to enable a detailed historical examination of events, provide an examination of the current situation in these regions. That also can be generalized to other coming events or processes. Similar to that of an unadulterated process tracing study (George & Bennett 2005: 5). Given that there still are some traces of a process tracing method.

3.5 A System of Indicators of Regional Integration in a Cross-border Region

In order to fulfil the task of measuring productivity and compare the development to that of the cross-border integration, a system of indicators of regional integration need to be created for the scope of such settings. There have been many efforts to create a system of indicators of regional integration, or “SIRI” as the leading researchers have chosen to call the system. Even the European Commission have announced the creation of an EU monitoring the progress of regional integration schemes in order to easier allocate the right type of resources to the right regions and projects (De Lombaerde & Van Langenhove 2005: 1-2). Some steps have been taken to create a similar conceptual frameworks have been used to monitor integration. Yet, have focused on a limited area, thus not capturing the full process (De Lombaerde et. al. 2008: 62). The core concept of the theory is thus to monitor the development of integration for a particular purpose. From a policy-making this such a system could make policies in these areas more efficient and transparent (De Lombaerde et. al. 2008: 42).

However, a system like SIRI have not yet been fully developed and put into use, although the European Commission have set up a series of studies in an attempt to create a regional index for integration, yet these are still somewhat a work in progress (De Lombaerde & Van Langenhove 2005, 2-3). The theories of creating a SIRI, have not yet been applied to cross-border regions. This is where the challenge of this thesis is, but also the importance of it. To create of a system that is specifically designed for cross-border regions, could be an important step forward in terms of theory developing the SIRI. Yet, for the scope of this study it is hard to create an index of cross-border integration, however, a system of indicators and classification of these indicators is one step closer to such a system or the creation of a future indexation.

Given the fairly low amount of research put in to find a SIRI on regional integration, even less can be found on cross-border regions. Since the material will be harder to evaluate, given that it is often two separate states proving the material. This is one of the reasons why a SIRI is complex to build, yet also since the preconditions and obstacles of integration varies for region to another. Something that will be taken into consideration throughout the methodological decision-making in the creation of the ‘cross-border SIRI’.

3.6 Classification of Variables for the SIRI in a Cross-border Region

The basis of the classification of variable have been to take as many aspects of the integration process into consideration as possible. Regional integration can not be seen as a homogeneous phenomenon, the course and content are constantly changing over time, especially in border regions, since each region have their specific challenges on both sides of the border. Thus, the starting point of an analysis and the creation of a 'cross-border SIRI' is rather a complex business.

When creating a system of indicators of regional integration, one has to take several important methodological decisions. What aspects of the integration will be cover, are is the SIRI intended to cover a specific sector, or will the SIRI cover integration in general or an explicit area. Also one has to take into consideration that models are always 'models', and does rarely compute with the full scope of reality and the 'real world', however, they are the best means that political scientist often have to describe and study different phenomena. This is also the case with levels of integration, since one can rarely find the text book example, for the scope of this research several models will be somewhat fused in order to come as close as possible to the area of research (De Lombaerde & Van Langenhove 2005: 18).

Variables in this sense can be seen as input in a complex negotiation process, where the outcome of the integration agreement hopefully can create some sort of institutional changes (De Lombaerde & Van Langenhove 2005: 18). The four main variables that will be used are the four main variables of integration that was introduced in the theory section: Economic and Industrial Integration, Institutional and Policy, Cultural and Social Integration and Infrastructural and Spatial Integration. It is a changes in these variable or "preconditions" that will be investigated in the analytical chapter. However, since integration is multidimensional and must thus have some level of flexibility in each case to investigate the specific events in each region (Dołzblasz & Raczyk, 2015: 364). The cross-border SIRI must thus reflect on the individual integrations process of the regions that are being investigated. Since no region are perfectly comparable to the other, some variations are bound to occur in a quantitative study (De Lombaerde & Van Langenhove 2005: 9). However, both cases will be investigating the following factors of indicators of integration, maintaining the structure of the four main theoretical areas:

Cultural and Social Integration Indicators

Structural factors

- Proximity of actors (cultural, geographical)
- Historical patterns of cooperation, integration and conflict
- Opinions and perceptions

Institutional and Policy Integration Indicators

Actors

- Number and quality of actors in decision-making process

Institutionalisation

- Institution building
- Arrangement on common policies and policy coordination
- Political interdependence

Implementation

- Implementation and status of treaties

Economic and Industrial Integration Indicators

Trade liberalisation

- Interregional Trade
- Interregional Labour Market
- Economic growth
- Trade facilitation measures
- Economical interdependence

Infrastructural and Spatial Integration Indicators

Transport

- Progress towards a common transport policy
- Application of harmonised transit regions
- Expenditure for maintenance of regional transportation
- Mobility of persons

These indicators are collected and compiled by Philippe De Lombaerde and Luk Van Langenhove from a discussion paper by the European Commissions Directorate General for Development on what indicators to include when investigating regional integration. (2005: 14-15). De Lombaerde and Van Langenhove have also completed a proposal for classifying variables them-selves, and this selection of indicators are collected from both SIRI's. Yet, to fulfil the aim of this study, to create a system specifically for a functional cross-border region in between European Union Member States, some adaptations have been made. Mainly with focus on the economic, social and transport areas of the cross-border region. While indicators focusing on security and implementation of international trade agreements, that are deemed to be more interesting for regions outside of the European Union. Mainly given that there is a wide range of existing harmonisation in these fields already.

3.7 Classification of Regional Productivity

As previously mentioned, there is a vast amount of way to measure productivity. The main method to measure productivity is to look at Gross domestic product per employee, in the individual regions (Bulavaskaya et. al. 2014: 3). The OECD for example uses the ratio between GDP and total employment in the specific region. This will also be the method of use in this study. However, in order to get the full scope of productivity, in terms of the regions development in the national economy as well as the level of innovation in the region, this study will also look at increase levels of Patent applications and the differences of GDP levels both respective countries across the border.

The amount of patents application in a region can be seen as one way of measuring the level of innovation in a region and previous studies have showed that a high amount of application has an impact on the levels of regional productivity (Bulavaskaya et. al. 2014: 6) and can thus be used in this study to ensure the potential changes in productivity.

4 The Oresund Region

4.1 Introduction to the Empirical the Chapter

This chapter, as well as the coming one, will be the foundation of the empirical study of this thesis. In this chapter, the integration processes of the case studies will be presented, one case at a time, only to be scrutinized in the coming analysis.

This empirical background of the Oresund Region has been divided into five separate sections based on the categories of each integration area, with a short historical background on the integration in the region. The sections are based on the indicators of integration in the methodological chapter, in the end of this chapter there is an overview of the indicators, to provide the reader with an summary of the obstacles for integration in the individual regions.

4.2 Historical Background

Despite a long history of warfare between Sweden and Denmark, as being one another's hereditary foe, has the relationship between the Scania region and Copenhagen always been close, not only in geographical terms. However, it was first in 1952 that the Nordic countries, Norway, Finland, Denmark and Sweden founded the Nordic passport union, an early predecessor to the Schengen agreement, coming into force in 1954. All Nordic citizens could freely work, move and study within the Nordic countries (Håkansson & Nielsen Svensson 2016).

Following the 1970's, both Malmo and Copenhagen had structural economic problems as a consequence of great loss in industrial production, that especially for Malmo, created several problems such as, unemployment, urban decay and social stratification. In an attempt to turn the negative trend and increase the regional attraction, the two cities began, in the 1980's, a collaboration to ensure infrastructural investments, a bridge, connecting Oresund to the rest of Europe. In 1991, the Swedish and Danish governments agreed upon the construction of a combined bridge and tunnel (Jerneck 2000: 197). The bridge can be said to be the starting point of the integration of the Oresund region, with high ambitions in the

region-building. Both Malmo and Copenhagen are, relatively, small cities, yet if the whole region is included, they have a joint population of almost 4 million people, and can be counted as one of the larger agglomeration areas in Europe. The largest agglomeration in the region can be found in Copenhagen with around 550 000 inhabitants, including Zealand and Bornholm the population has a total number of 2,5 million inhabitants, while the Malmo area has a population around 300 000 inhabitants. Yet, the full region of Scania included the full number is 1.3 million (Oresund Committee, 2012: 7-8).

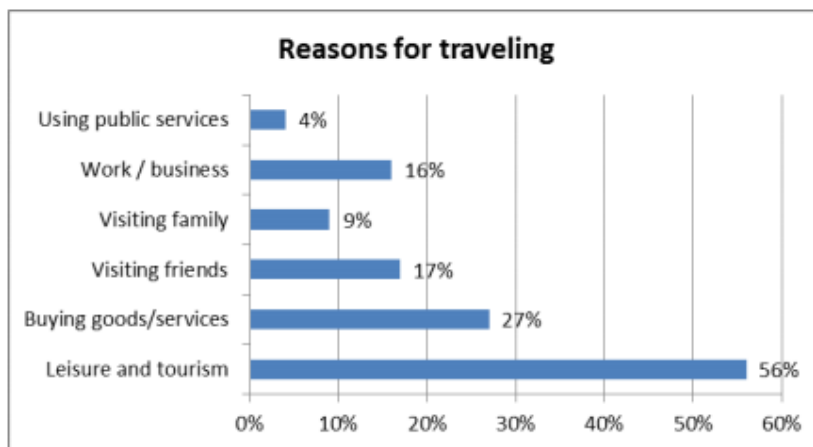
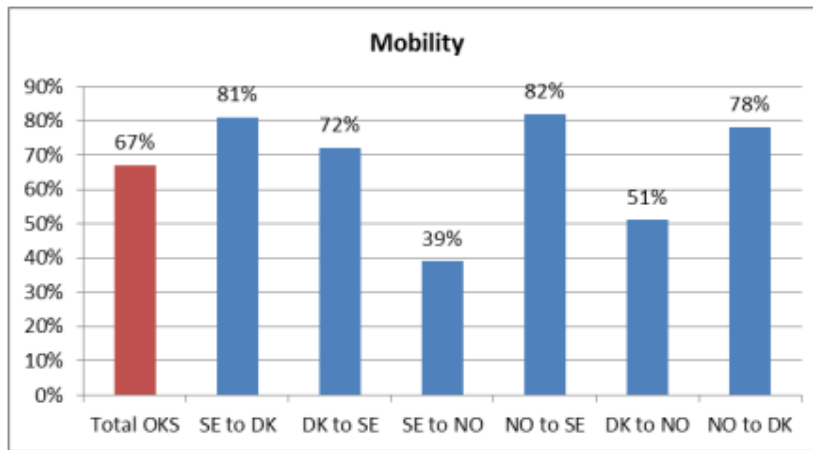
The region has also been seen as the ‘flagship programme’ of the European Union funded Interreg programme (OECD (1) 2003:28). Since Oresund have a unique cross-border setting between two countries, that is already quite harmonised in terms of legislation. Yet, the region is still facing some of the same challenges as in the 1980’s, despite the efforts in terms of reports and inquiries made by legislators on respective side of the strait.

4.3 The Cultural and Social Integration

The preconditions of a functional region and the structural factors of integration are very present in the Oresund area. Both in terms of geographical proximity and cultural. Both the Copenhagen and Scania can be said to share common ‘Nordic Values’, with similarities in culture as well as linguistics (Nauwelaers et. al. 2013: 12).

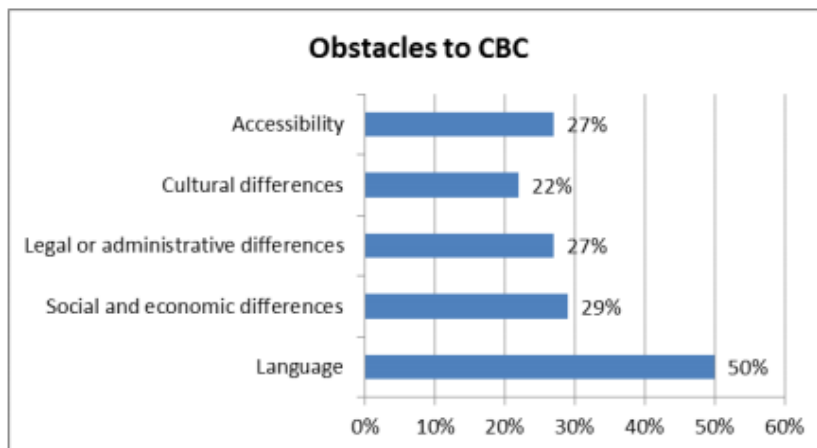
The European Territorial Co-operation programme have defined a wider area cross-border area that the Oresund Regions is interconnected with, together with Skagerrak and Kattegat regions the apply for EU funding and take part in regional programme (Nauwelaers et. al. 2013: 14). This also includes cross-border surveys. Yet, they can be used in to se the overall opinions of the region. Since they have some interesting findings. In the 2015 Eurobarometer: 81 percent of the Swedes on the survey had travelled to Denmark, while 72 percent of the Danes had travelled to Sweden, during the passed year. The average figure in the European Union is 53 percent (see. 1.3.1) (Eurobarometer (2) 2015: 2)

4.3.1 Mobility, and Reasons for Traveling



(Eurobarometer (2) 2015: 2)

Thus, the majority of the travels within the region are still leisure and shopping travels. This region also has the second highest levels trust, where around 94 percent (differing from 91-97 percent), would be comfortable to have a colleague, family member etc. from a neighbouring country. The study also show that 48 percent see it as an opportunity to live in a cross-border region, for 47 percent, it has no impact. One of the most interesting findings is that 29 percent of the respondents do not see any obstacles of cross-border cooperation in these regions. The rest of the respondents see mainly language as the key obstacle for cooperation (Eurobarometer (2) 2015: 4).



4.3.2 Obstacles to Cross-border Cooperation

(Eurobarometer (2) 2015: 4)

As previously mentioned, these figures also include Swedish-Norwegian and Norwegian-Danish relation, yet it shows strong indicators for low cultural and social obstacles for integration. Since only around 20-30 percent view this as an obstacle for cross-border integration. The social and economic disparities may be a result of different levels in salary between the nations, since Sweden have relatively low salaries compared to both Denmark and Norway. Due to changes in currency rates have the differences decreased (Nauwelaers et. al. 2013: 23). Still, other studies have showed that despite similarities of culture in general, the Danes and Swedes have, different approaches to business. Where the structure of business conducts differs within the region, creating some obstacles for integration (Nauwelaers et. al. 2013: 12).

4.4 The Institutional and Policy Integration

After the governmental agreements to build the Oresund Bridge, the Oresund Committee was founded in 1993, and was originally a network of politicians from the bigger coastal cities. Since then the organisation has changed name to, the Greater Copenhagen and Skåne Committee (GCS Committee), and have been expanded in terms of members and size. Today all of the municipalities in the Scania region, Copenhagen, Fredrikstad, Bornholm and Zealand as well as the regional government of Scania, Region Skåne, the regional level government of Scania. Both of the national governments had, until 2006, observatory seats in the GCS Committee. When looking at cross-border cooperation in Europe, the level

of regional and local self-ruling becomes an important factor. In the northern parts of Europe this is more common to have a strong local and regional autonomy. In these areas, the cross-border institutions can act as supplements of existing political structures. Thus, can politicians elected elsewhere represent their electorate in these new institutions as well. The GCS Committee is an excellent example of this (Hall 2008: 247).

As of January 2016 the new structure of the GCS Committee has been finalised, the main changes are that the permanent seats are 18, nine Swedish and nine Danish, and the presidency is divided 60/40 to Danish advantage. Before the new organisation was created, there was intense discussion on the Swedish side of the strait, yet when the agreement was finalized all 79 municipalities have joined the new organisation (Johansson/Skånskan 2016). Yet, there are still no private or corporate organisations present in the GCS Committee, something that the OECD in their Territorial Review from 2003, points to in the recommendations. That such organisation should have advisory or observatory membership (2003: 24-25).

The GCS Committee have also undergone a series of studies and investigation, where the deficits in democracy have been highlighted. Where especially The Secretariat of the GCS Committee have received some critique for lack of democratic transparency and their strong agenda-setting powers. Mainly since the high level of public official influence, since the proposals made by the secretariat of the GCS Committee, especially in terms of Interreg funding, have not been questioned or altered during the year (March 2002- March 2003) of study performed by Patrik Hall. The critiques put forward are very similar to that of the European Commission, that the technocratic competences are not questioned, regarding the funding distribution and allocation (Hall 2008: 428). Today and as of 2006, the Oresund Region is applying for these EU funding together with the two regions Kattegat and Skagerrak. Thus, all cross-border data that are associated with Oresund region now also covers these two areas. Yet, there main focus of the Committee is still to promote integration in the regions. In 2010 they released the report '33 Obstacles, Challenges and Possibilities' in 2015, 11 of these issues were solved (Oresundsinstitutet 2016: 8) and the goal to abolish 3 cross-border obstacles a year have been kept until 2014 (Oresunds committee 2014).

Since, Denmark and Sweden are one of the OECD's administrative most decentralised members, it is natural that cooperation in a local and regional level is relatively easy to create. As a consequence, the policy coordination on local and regional level, can be said works quite well in the areas that the local and regional government have competences in (OECD (1) 2003: 28). Given the decentralised structure, the two national governments have a limited influence in the region. However, when it comes to fiscal policy, tax and employment legislation, decisions are still made at national level, and despite the high level of integration in other fields, Sweden and Denmark still differ in many aspects (Garlick et. al. 2006, 18). As of 2006 has the national governments no observatory seats in the

Committee, the organisation also has to lobby the governments actively to create policy changes just like any other region. With the only difference that the cross-border regions have two governments that needs to agree on policy implementations.

However, when it comes to implementation of European Union legislation and new provisions, are both Denmark and Sweden renowned for their high level of compliance, when compared with many other Member States (Falkner et al. 2005: 317). Unlike many other cross-border regions the Oresund region already have a functional national legislation, enabling interregional migration and trade. The implementation of some European Union legislation has in some way, enabled a deepening of an already somewhat functioning system (Nauwelaers et. al. 2013: 12).

4.5 The Economic and Industrial Integration

Being neighbour the trade between Sweden and Denmark have naturally always been high, however the economic exchange has never been higher. Also the importance of the Oresund region is also increasing. In 2012 the Oresund accounted for 27 percent of the total GDP in Sweden and Denmark combined, however while Copenhagen stands for 49 percent of the Danish GDP, Scania only produces 11 percent of Sweden's total GDP. Two thirds of the total gross regional product are produces in the Danish side of the region, despite the fact that the Danish where more affected by the financial crisis in 2009 (Orestat 2012: 15). This also creates an economic imbalance that shows also in the labour market, over 90 percent of the cross-border commuters in 2011 was commuting to Copenhagen from Scania (ESPON 2011: 38).

As previously mentioned, the fiscal polices of the region are decided upon at a national level and the two countries have quite different approaches, in terms of ex. taxation and labour market policies. Denmark, unlike Sweden, collect the social taxes directly from the households, in Sweden these are collected directly from the payroll, paid for by the employer. The labour market rules in Sweden gives a lot of protection for both the employer and the employee, while the Danish market are more oriented on the flexibility of both employee and employer. Wages in Denmark are also substantially higher than in Sweden, yet with the changes in currency. The differences have been somewhat evened out (Nauwelaers et. al. 2013: 18). The unemployment levels are also substantially higher in Malmo compared to Copenhagen, in 2014, 10.7 percent of the population was listed as unemployed in the Malmo area, compared to 6,9 percent in Copenhagen (OECD 2014, see appendix).

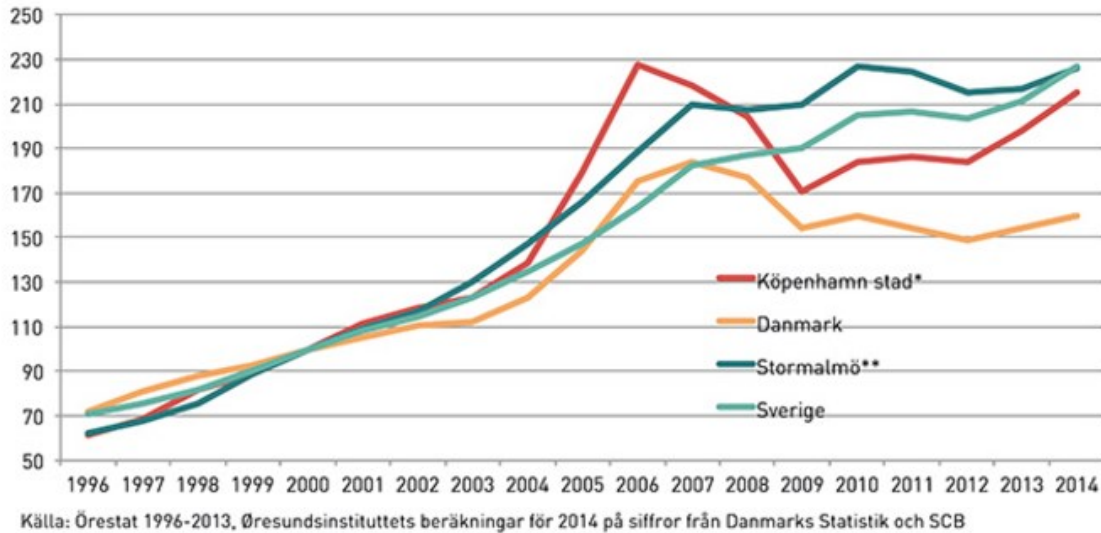
The Oresund has, despite the financial crisis, had a prosperous economic growth. However, there are vast disparities in the sub-regions. Especially large is the differences between the rural and the urban areas. The Oresund region includes some of the most prosperous and most depressed areas in Denmark and Sweden. (Nauwelaers et. al. 2013: 15) Especially in the eastern part of Scania, suffering from decreasing popularities and potential brain-drain issues. Some of the areas in Zealand are experiencing similar issues in relation to Copenhagen (OECD (1) 2003: 67-68). According to Orestats Trends in Oresund study from 2012, it is too early to say that the Oresund region is a fully functional and interdependent region (2012: 15). In reports from the OECD it has also been claimed that the region is not performing according to its full capacity, especially in terms of economic measures (OECD (1) 2003: 21-22).

However, in the region there is also a strong presence of cross-border intelligence tools, such as the Orestat and the Oresund institute monitoring the integration between the two regions. In particular, the economic integration. Yet, the Orestat, have had some difficulties in financial support from the national governments, thus have not really been that updated for the last few years. Another organisation that supports and promotes the labour market integration, that also is directly funded by the GCS Committee, is the Oresund Direct. There are a variety of organisations supporting the regional development, supported financially by the European Union, the Nordic Council of Ministers, national governments as well as the local and regional authorities. Thus, there is a strong support for the regional development on all levels (Nauwelaers et. al. 2013: 9).

4.6 The Infrastructural and Spatial Integration

There has been a vast amount of investments in infrastructure in the Oresund region. The main and largest investment opened in 2000; the Øresundsbron, a bridge and tunnel for road and rail tracks between Copenhagen in Denmark and Malmo in Sweden (Knowles 2006: 415). During the years following the opening of the bridge the traffic cross the strain increased with 10-17 percent per year (cars and veicles) and the amount of rail passengers increase with 6-25 percent per year (Oresundsinstittet (2) 2016). The main reason for the increase was the high housing prices on the Danish side, yet in 2006, the Danish housing bubble burst.

4.6.1 Housing Prices in the Oresund

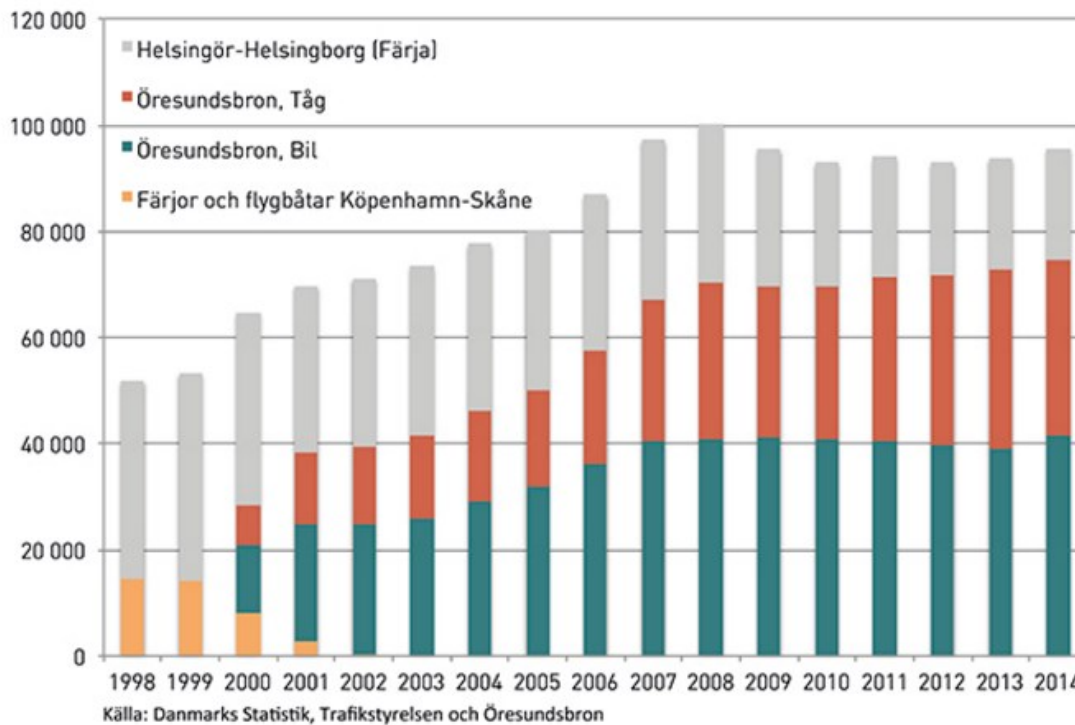


(OresundsInstitutet, (1) 2016)

In this graph, the housing prices in Copenhagen City (red), Denmark (yellow), Malmö City (Dark green) and Sweden (green) are portrayed. Here we can see that the housing prices in Malmö are not completely integrated with the Danish market. Yet, during the period of 'recession' in Denmark did Malmö, not have an increase in prices unlike the rest of Sweden (OresundsInstitutet, (1) 2016).

4.6.2 The Daily Number of Individuals Traveling over the Oresund

(Oresundsinstittet (2) 2016)



In the graph above (5.5.1) the daily average of transportation across the bridge is showed, in the top pile ferry traffic between Helsingborg-Elsinore (grey), Oresund bridge by train (red), car (dark green) and the ferries crossing the Oresund before the bridge was built (yellow). In 2014, there was an average of 75,000 travelled daily over the Oresund Bridge in the car, train or bus. This corresponds to approximately a quarter of the population of Malmö. More than half (55 percent) cross the bridge by car or bus, while 45 percent travel by train. In 2014 there were five times as many travellers crossing the strait, as in 1999, the year before the Oresund Bridge opened (Oresundsinstittet (2) 2016).

There have been several policy changes in order to harmonise and coordinate the public transport system. After the bridge opened in 2000, the Region of Scania and Copenhagen commuting system have efforts to coordinate the transportation system in the region, however there is not yet a cross-border planning committee to structure infrastructure investments. Since, in both countries, bigger investments are decided upon on a national level (OECD (1) 2003:19). The lack of cooperation in spatial planning was also one of the critiques against the integration levels in Oresund by the OECD. The region has a system that enables travels in the full region, making commuting easier, yet cohesive infrastructure planning and monitoring of movements across the region are still operated by the limited funds of the Oresund (OECD (1) 2003:19).

In a European setting the Oresund region have the biggest annual growth of commuters with 26,5 percent annually. However, more than 90 percent are traveling from Malmo or Scania to Copenhagen (ESPON 2011: 38). Something that can probably be explained, partly, by the higher wages on the Danish and the lower costs of housing and living in Malmo.

4.7 Overview of the Cross-border Integration Indicators

The Oresund Region - Overview	Specification	Comments
Cultural and Social Integration Indicators		
<i>Structural factors</i>		
Language	Similar	Danish and Swedish have similar structure
Proximity of actors (cultural, geographical)	Low	Similar culture, different in business
Historical patterns of cooperation, integration and conflict	High	Long history of trade and cooperation
Institutional and Policy Integration Indicators		
<i>Actors</i>		
Number and quality of actors in decision-making process	Local, regional, national	(2x) All level of the political spectrum, yet high decentralisation
<i>Institutionalisation</i>		
Institution building	Medium	Cross-border cooperation body, exists.
Arrangement on common policies and policy coordination	Medium	Cross-border cooperation body, yet many actors involved.
Political interdependence	Medium, high cooperation	Malmo more dependant then Copenhagen
<i>Implementation</i>		

Implementation and status of treaties	High	High level of implementation of legislation
Economic and Industrial Integration Indicators		
<i>Trade liberalisation</i>		
Interregional Trade	Medium	High between Swe&Den, yet not within the regions potential
Interregional Migration	Low	
Economic growth	Low	Compared to other similar regions
Trade facilitation measures	High	Long-term cooperation
Economical interdependence	Medium	Malmo dependent on Copenhagen
Mobility of persons	Low	Compared to other similar regions
Common Currency	No	DKK and SEK
Infrastructural and Spatial Integration Indicators		
<i>Transport</i>		
Progress towards a common transport policy	Medium	Still on regional level
Application of harmonised transit regions	Harmonised	Same transit system
Expenditure for maintenance of regional transportation	Separate	National level

5 The Region of Vienna-Bratislava

5.1 Historical background

Many regions in Europe, especially in cross-border regions have a diversified past with fluctuant borders and several influences. Just like the Copenhagen and Skane regions, was Bratislava and Vienna once a part of the same rule, the Austrian-Hungarian Empire. With Vienna as the capital of the Empire, and Bratislava, for some periods, the capital of the Hungarian Empire (OECD (2) 2003: 22-23). Yet, following the end of the First World War and the independence of Czechoslovakia, the region was divided with high borders (Patti 2016: 2).

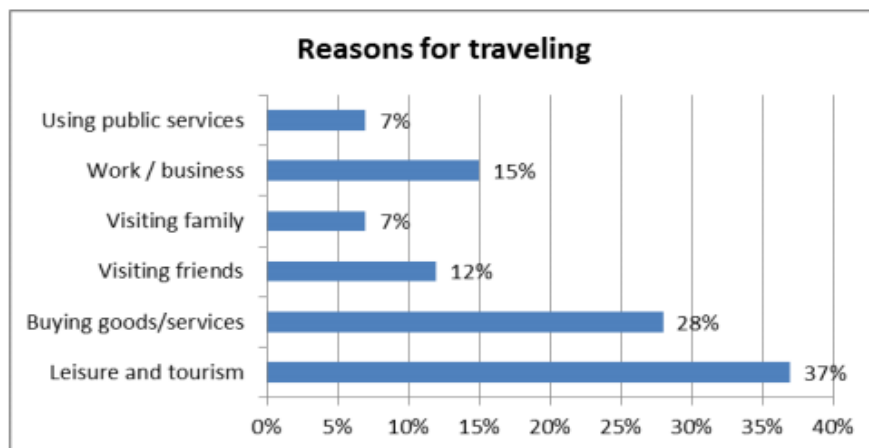
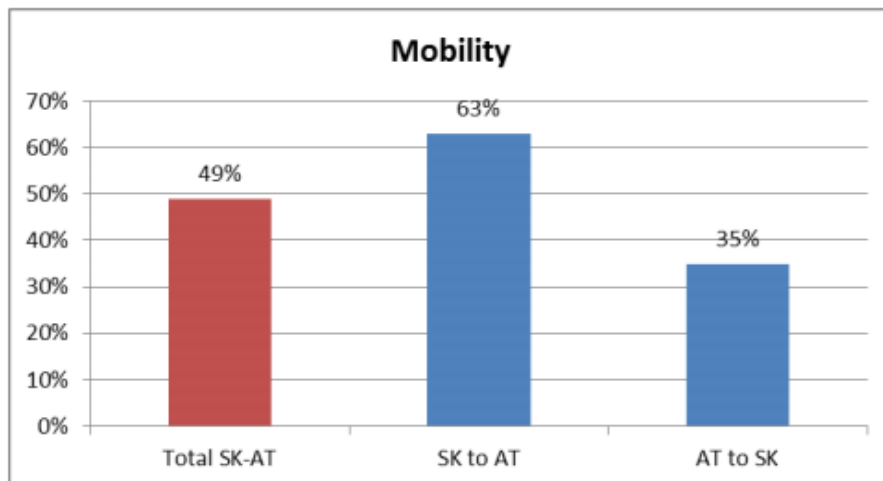
The cross-border region of Vienna with a population of 1,7 million (2014) and Bratislava with a population of 420,000, (2004) are now undergoing what can be compared to a reunification process (Patti 2016: 2). The region is one of many who after the fall of the Iron Curtain, now are creating new functional regions all over Europe (Patti 2016: 2-3). The two cities spent almost 40 years of without any cooperation, living 'back to back' (OECD (2) 2003: 125).

Following the "Velvet divorce" in 1993 and the Slovak entry of the European Union in 2004, the region is now creating a new era for integration between Austrian capital and Slovak capital, as well as for the two nations. Being the two 'closest' capitals in the world, located only 60 km from one another, this is a very natural process. The long separation has also left traces in the levels of integration, in all the areas that will be studied, yet the increased 'Europeanization' have brought Slovakia and Bratislava closer to their western neighbours (Patti 2016: 2-3). However, the closeness of the region has helped to regain some of the years that have been 'lost' in terms of integration. Today, the functional metropolitan region of Vienna- Bratislava encompasses, the three federal provinces or 'Länder' Burgenland, Lower Austria and Vienna, that together belongs to the 'Vienna Metropolitan region' and the Slovak regions of Trnava and Bratislava that creates the 'Bratislava Metropolitan Region' (Jaššo, 2007: 358). Nonetheless, the region is still lagging behind in some of the basic areas of integration, this will be further presented in the coming sections.

5.2 Cultural and Social Integration

Being a former part of the Austrian-Hungarian Empire, in the beginning of the 1900 Bratislava was a multilingual city where a majority of the population also was fluent in German. As a consequence, the two agglomerations had close economic and cultural interactions. Today the language barriers are one of the main barriers in the region, followed by the mental barriers of prejudices and norms (OECD (2) 2003: 23, 42). Some of these issues have been tackled by an increased interactions following the EU-enlargement, the Eurobarometer survey still show a vast difference between the Oresund- Skagerrak- Kattegat survey and the one made in the Vienna- Bratislava Region.

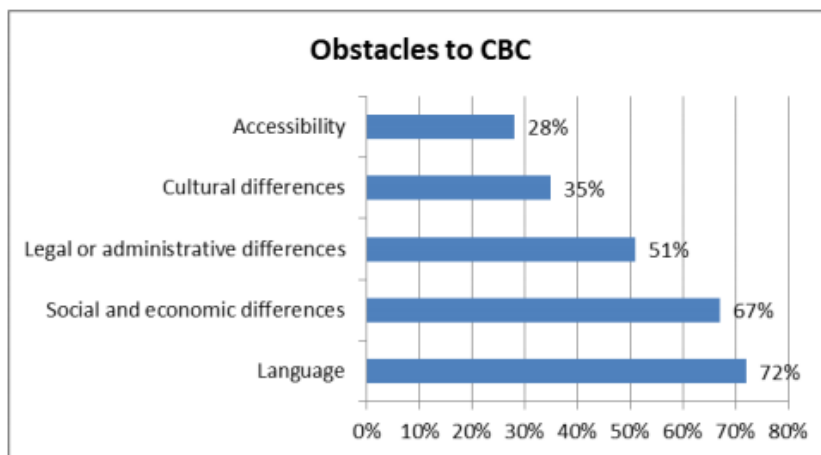
5.2.1 Mobility and Reasons for Traveling



(Eurobarometer (3) 2015: 2)

The graph shows the amount of people who during 2014 travelled to the neighbouring region. A majority of the Slovaks in the survey have visited Austria during the past year, yet a minority of the Austrians have done the same journey. The absolute majority of the journeys was leisure or shopping related, yet interesting enough was the third most common reason for traveling, related to work/ business.

5.2.2 Obstacles to Cross-border Cooperation



(Eurobarometer (3) 2003: 5)

The most interesting findings of this study is that 90 percent of the participants in the study thought that there is some kind of obstacle for cross-border cooperation in the region. As previously mentioned is the language barrier the main obstacle for a cooperation. Another interesting observation that can be made, is that this region has a higher level of perceived cross-border obstacles, in all areas but accessibility who has an EU average of 30 percent. Language has an EU average of 57 percent, social and economic differences 46 percent, legal and administrative 45 percent, and cultural differences, EU average of 32 percent (Eurobarometer (3) 2003: 5). The most interesting feature is the difference in social and economic differences. Despite a high economic development is the Slovakian Republic still struggling with substantially lower wages, disparities in prices and social difficulties (Jaššo 2007: 359). These differences establish and maintain both the economic obstacles but also the mental ones, making the cultural proximity very large, despite the small geographical proximity.

5.3 The Institutional and Policy Integration

After the fall of the 'Iron Curtain' in Europe, the region experienced rapid integration and economic development. Yet, despite the proximity of the cities, there is still no institutionalised cooperation, instead the region is jurisdictionally fragmented, slowing down as well as making it difficult for an institutionalised cross-border cooperation (OECD (2) 2003: 125).

The Slovak and Austrian decision-making structure within the region are as far apart as the capitals are close. The Slovak system is highly centralised, with decision-making power in many areas on a national level, since 2001 have the Slovakian regions undergone a process of reorganisation and gained specific competences, but they still lack a lot of financial resources (Lundquist & Tripl, 2009: 22). This has a lot to do with the sizes of the municipalities who are among the smallest in Europe, creating huge difficulties in terms of both coordination and cooperation. Making it extremely difficult for the local level to manage anything besides the core functions, such as local infrastructure (OECD (2) 2003: 134).

While the Austrian organization has a decentralised system where a majority of the decisions such as taxation, spatial planning etc. are taken on a local and regional level, in municipalities and federal regions (Patti 2016: 3). However, the Austrian system is not built for cooperation across regional border. Since the fiscal system promotes competition between municipalities in fiscal terms. Instead the platforms and projects formed are more informal and business-like in its settings (OECD (2) 2003: 131). The PGÖ (Planungsgemeinschaft Ost) is the Austrian organization for the administration of Burgenland, Lower Austria and Vienna. The initiative coordinates the regional planning issues, and deals to some extent also with cross-border activities and networks (OECD (2) 2003: 131, Patti 2016: 3). Yet, this semi-formal institution does not have the mandate to negotiate on cross-border issues. Since these are shared between the regional and local authorities in Austria, but in Slovakia this is mainly controlled by the regional government in Bratislava.

These differences in policy-making settings have made the institutionalising of cooperation in the region more difficult to create since the decisions are taken on such different level of governance and as of today there is still no institutionalised cross-border cooperation specifically for the whole metropolitan region of Vienna-Bratislava (Patti 2016: 3-4). However, there have been some attempts to pave way for such a project. Between 1996-2001 was the Vienna Tele Cooperation Centre (VITECC) launched, aiming to create a dialogue and an initial economic and political cooperation, between Vienna, Bratislava, Győr and Brno. By creating interlocutors in the main cross-border cities, paved the way for the Cross-border Business Cooperation for Central Europe (CCC), that was created by the City of Vienna in 1998, to promote and assist Austrian companies in

business possibilities arising from European Union enlargement (Sohn & Giffner 2015: 1195). Yet, the more current and extensive cross-border cooperation has clear historical features:

The Centrope Initiative, is one of the larger cross-border cooperation in Europe and covers the former Austrian-Hungarian Empire, today the Central European Region consisting of eight federal provinces and regions in Austria, Czech Republic, Hungary and Slovakia, thus including the Vienna-Bratislava region (Patti 2016: 3). The comprehensive cooperation was initiated in 2003 with the ambition to enhance the competitiveness, strengthen the social and entrepreneurial commitment, as well as the economic development of this cross-border region. The difficulties of institutionalization the cooperation lead to a revision of the strategy in 2008-2009 with the launching of 'Centrope Capacity, focusing on initiatives of multilateral cooperation (Sohn & Giffner 2015: 1195). The cooperation is still struggling with substantial degree of institutional distance, and institutional building and policy coordination is still far from a reality, despite the initiation of a Steering Committee and regular meetings and summits (Lundquist & Tripl, 2009: 22-23). Thus, the initiative is suffering from the same institutional proximity that also are hindering integration in the Vienna-Bratislava region.

However, there is still some hope for a coming cross-border institution, a coordination attempt was launched in 2014 between the City of Bratislava, the Regional Management of Lower Austria and the Regional Management of Burgenland. The EU-funded project is called the Bratislava Umland Management (BAUM), and aims to develop a Multilateral Expert Platform, that will coordinate and prepare an Urban and Regional Planning Concept, between the municipalities across the border. This project is a follow-up on previous smaller cooperation, such as KoBra and Jordes+, only involving the municipalities along the border, and not Bratislava directly (Patti 2015: 6). Yet, the project still does not involve the City of Vienna, and are thus not covering the full functional region.

5.4 The Economic and Industrial Integration

The economic integration in the region have had quite an advantage to the institutional since the Slovak entry in the European Union in 2004 (Lundquist & Tripl, 2009: 22). With the Schengen Agreement companies can trade freely across the border. Many business oriented initiatives started already during the Slovakian period as a candidate country, such as the CCC. After the Slovak entry the "Twin city" project was formed by business associations on both side of the border, to promote business and cooperation. However, the only permanent achievement of the project is a Danube river shuttle between the two capitals (Sohn & Gifinger 2015: 1196).

The economy in the two regions has been increasingly interlinked yet have had difficulties to integrate fully, especially in terms of mobility of persons and labour markets. This also has an explanation. After the Slovak entry to the EU in 2004, Austria decided to apply the longest possible period of restricted access to its labour market for the new European Union Member States. It was first in April 2011 that the full scope of the Schengen Agreement applied to the region of Vienna-Bratislava (Liptáková 2010). By then Slovakia had already signed the Schengen agreement in 2007, and became a full member of the European monetary union in 2011 (Nič et. al. 2014: 7). Creating problems especially in the Austrian heavy industries, such as construction and machinery, where many of workers are from Slovakia and Hungary. When it came to trade flows, the Austrians was of a different opinion, however. The entry of the European Union also leads to an increase in the bilateral flow of goods across the borders, in the year of 2008 the annual flow of goods amounted to 4.7 billion euros, according to the Slovak-Austrian Chamber of Commerce. Making the Austria the second largest trade partner for Slovakia (Liptáková 2010). Slovakia has since its independence focused on getting the fiscal policies and the financial sector of the country up to speed. Recapitalising the bank sector and cleaning up the states bad loans in 1999, have given Slovakia one of the healthiest bank sectors in Europe post-financial crisis. Followed by a tax reform in 2004, abolishing taxes on property, inheritance and dividends. These are some of the reforms that have provided the country with a political and economic stability (Nič et. al. 2014: 7).

5.5 The Infrastructural and Spatial Integration

The Bratislava-Vienna region constitutes a functional region with 3.5 million inhabitants. The two cities in the region are divided by a scarcely populated rural area (OECD (2) 2003: 30). Despite that region functions as a metropolitan area, there is still no institutional body responsible for the integration of the two capitals (Patti 2016: 3). The governance of the regions transportation system is divided between the three federal provinces on the Austrian side of the border, were each have an individual Urban Planning Law, while the Slovak regions follow the Slovak Urban Planning Law. Thus, four different legal systems in total. As previously mention, is there some cross-border cooperation covering some parts of the region, however, none these initiative have any binding decisional power in terms of spatial planning or coordination (Patti 2016: 2-3). The cooperation on the spatial planning needs to be put in perspective. This is a region how has struggled with short-term cooperation projects for several years, and spatial planning is the only area where the Vienna-Bratislava region have managed to get some informal planning structures, especially in the Centrope forum, but also as an outcome of the Twin City initiative.

The need for a cohesive territorial plan, has been recognized on both sides of the border. The challenges are to overcome fragmentation and in the process of implementation (Patti 2016: 9). Despite the lack of cooperation, the infrastructure between the two capitals are still quite well developed. In a report made by the ESPON Monitoring Committee, the interactions possibilities in cross-border public transport between Vienna and Bratislava receives a four ‘strong’ out of five compared to other similar regions in Europe, while the amount of cross-border commuters receives a one, ‘very weak’, since only 1000 people was estimated to cross-border commute every day in the region (ESPON 2011: 43, 82).

There as been some similar reports like the one made by ESPON, but since there is no long-term cooperation in the region, there is no long-term statistical monitoring of the region. This limitation also makes it hard to find material on cross-border commuting. Instead, this study will rely on a study made in 2007 by the European Commission DG Employment and Social Affairs, investigating Cross-border commuting. This was the first report on this type of topic, still it does not cover individual regions only the full member states. Yet, one can assume that the most of the commuting between Slovakia and Austria are made in the Vienna- Bratislava region. However, this has to be taken into consideration.

5.5.1 Commuting Between Austria and Slovakia

Something that also needs to be mentioned is that these graphs show the general commuting pattern and not between specific regions. They only portrait the nationality of the commuter and not what Member State they are commuting too in the first graph and then in the second graph the amount of people commuting in to the country from other countries (Nerb et.al. 2009: 18, 20).

	Out-commuters per 1000inhabitant	In % of overall	Increase/Decrease (%)
Years			200-2007 // 2004-2007
Austria	3.2	3.4	6.5 //1.9
Slovakia	6.2	4.0	X//25.7

	In-commuters per 1000inhabitant	In % of overall	Increase/Decrease (%)
Years			2000-2007 // 2004-2007
Austria	5.2	6.2	230.6 // 48.1
Slovakia	0.6	0.1	X//25.7

(Nerb et.al. 2009: 18, 20)

These graphs portrait the amount of inhabitants commuting to or from their country of origin. In these graphs we can clearly see strong push and pull factors. according to this study, there is a high inflow of workers to Austria, where 6,2 percent of the work-force are commuting, compared to 0.1 percent in Slovakia. These numbers, indicate that Austria is not only attractive to commute to, but Austrians are also attractive on the labour market elsewhere.

5.6 Overview of the Cross-border Integration Indicators

The Vienna-Bratislava Region - Overview	Specification	Comments
Cultural and Social Integration Indicators		
<i>Structural factors</i>		
Language	Different	Slovakia, formerly duo lingual, not anymore.
Proximity of actors (cultural, geographical)	High	Different cultural structures, yet close in geography
Historical patterns of cooperation, integration and conflict	Historic: Yes Contemporary: No	Cooperation started at Slovak independence
Institutional and Policy Integration Indicators		
<i>Actors</i>		
Number and quality of actors in decision-making process	A lot of actors	A multitude of actors on each level,
<i>Institutionalisation</i>		
Institution building	Low	No functional cooperation
Arrangement on common policies and policy coordination	Low	Only in transport
Political interdependence	Low	Bratislava dependent on Vienna
<i>Implementation</i>		
Implementation and status	Medium	Normal

of treaties		implementation levels
Economic and Industrial Integration Indicators		
<i>Trade liberalisation</i>		
Interregional Trade	Medium	
Interregional Migration	Low	Some commuting from Bratislava
Economic growth	High	High growth in B.
Trade facilitation measures	High	B. have imposed liberalisations
Economical interdependence	Medium	Bratislava dependent on Vienna
Mobility of persons	Low	Compared to similar regions
Infrastructural and Spatial Integration Indicators		
<i>Transport</i>		
Progress towards a common transport policy	High	Cooperation exist in the area
Application of harmonised transit regions	Harmonised	Same transit-system
Expenditure for maintenance of regional transportation	Low	Still on local level

6 Productivity in the Cross-border Regions

In this chapter the final research question will be studied, answered and analysed:

- How/in what way/to what degree have development in regional integration affected productivity in the two cross-border regions: The Oresund region and the Vienna- Bratislava region?

First, the main changes in the indicators of integration for each region will be presented followed by an empirical presentation and analysis of the levels of productivity from 2000 until 2013. As previously mentioned the level of productivity will be monitored in the individual metropolitan cities. To see if the levels differentiate as a way to observe possible levels of economic interdependence, yet also to see if the integration is affecting the productivity in the cities differently. The main idea of analysing the productivity in this sense, is as previously mentioned, to facilitate the future analysis in this field of study. One, to act as a theory developing thesis when applying these issues to a functional cross-border region.

6.1 Changes in the Indicators of the Oresund Region

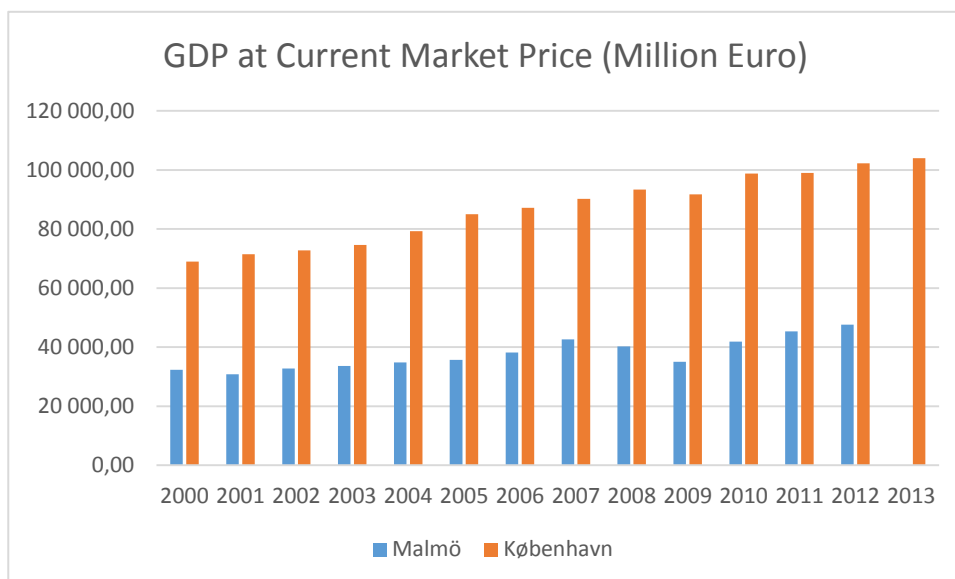
When investigating the Oresund cooperation and obstacles of integration before 2000, was the main issue in the region the lack of functional infrastructure, since there were only ferries operating the two cities. In terms of culture and policy, the Swedish and Danish side were already quite integrated. The process of integration that many European regions are going through now in terms of harmonisation of legislation etc. have, to a certain degree, already been implemented in the Oresund region. During this investigation of the Oresund integration through the system of indicators of regional integration, from 2000 until 2013, the critical changes in integration have been limited. In the rapport released by the GCS Committee in 2010 with '33 obstacles of integration', was five years later reduced to only 22 obstacles, issues such as different currencies, expensive bank transactions and postage are still not solved. Yet, the goal to abolish 3 border obstacles a year was still fulfilled in 2014. The integration in the Oresund region are moving slowly but steadily forward.

Thus, the main changes are in the indicators for integration is the building of the Oresund bridge, the only other critical changes in the integration that have occurred during the period of study, is the Danish housing crisis in 2006 that affected the amount of commuting across the bridge. That also was worsened by the financial crisis. This does not mean that there has not been changes in the integration, yet not enough to provide potential substantial and visible changes, that well be used in the operationalization of the productivity in the coming chapter.

6.2 Productivity in the Oresund Region

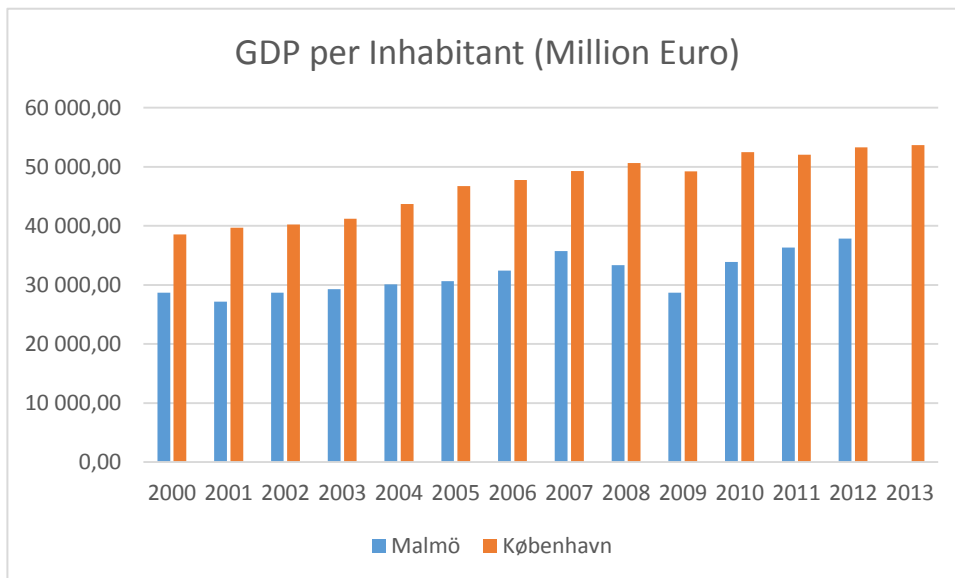
As previously mentioned, the years that are of certain importance for the Oresund integration are the year 2000, where the bride was build. This is also the year that most of the cross-border monitoring begun in the area. In these calculations the numbers are based on the Eurostat metropolitan database. Thus, the Copenhagen and Malmo numbers include the full regions, in the case of Malmo, Scania is also included and Zealand and Bornholm in Copenhagen.

6.2.1 Gross Domestic Product at Current Market Price



(Eurostat Database 2013)

6.2.2 GDP per Inhabitant (Million Euro)

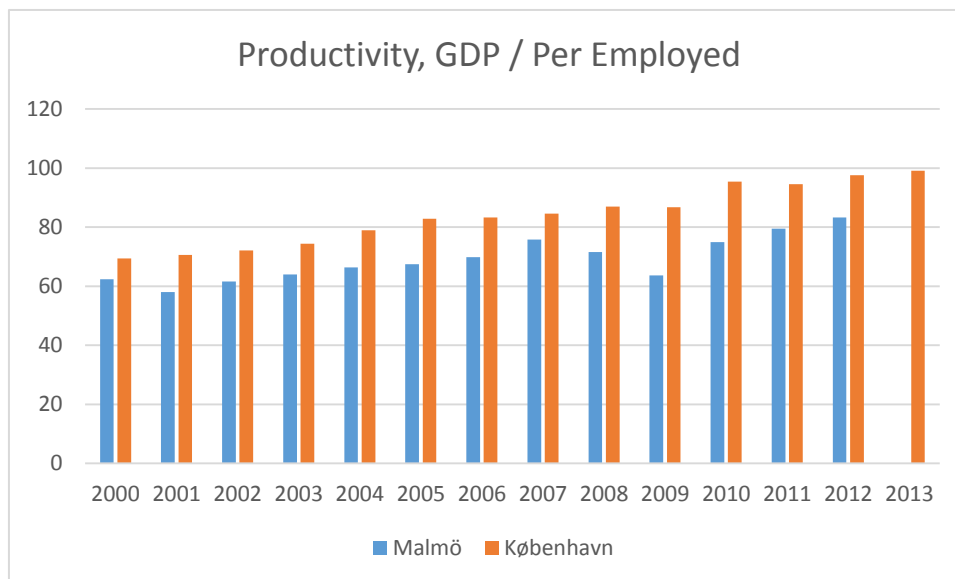


(Eurostat Database 2013)

When comparing Malmö and Copenhagen it is important to remember that, one Copenhagen is significantly bigger in size and are the capital of Denmark, compared to Malmö, being the third largest city in Sweden. Thus, does not have the same amount of cooperate agglomerations. This becomes more apparent when looking at the GDP per inhabitant.

The differences have been smoothening out somewhat when observing the GDP per inhabitant graph, yet there is still a much higher level of GDP per inhabitant in Copenhagen, and becomes apparent that Malmö is not as strong of an economy as Copenhagen. When looking at the year of 2006, the increase in GDP is flattened out somewhat in the two cities. Indicating that their economies still are somewhat integrated.

6.2.3 Productivity based on GDP



(Eurostat Database 2013)

In this graph is calculated as GDP in million euros / per working individual or employed (the numbers and calculations can be further investigated in the Appendix). Thus, not per inhabitant, in this way the unemployment rates are not included, that are somewhat higher in the Malmo area. In this graph are also the number not as different as in the previous graphs. Despite the fact that Malmo has higher fluctuations during the financial crisis, the levels of productivity is still somewhat on a similar level of both sides of the Oresund. However, during the years of the Danish housing crisis, it becomes apparent that the economy is somewhat at a still. While the Swedish sectors are still increasing its productivity.

These numbers are based on the level of GDP in the region, in order for the two studies to be more comparable, statistics from the same source are used. Yet, in the Oresund region there are studies made, that have calculated a more exact number. Given that Malmo is not the capital of Sweden where most of the resources are allocated. It is more accurate to also compare with the numbers in gross regional products, when these numbers are available.

6.2.4 Productivity based on GRP

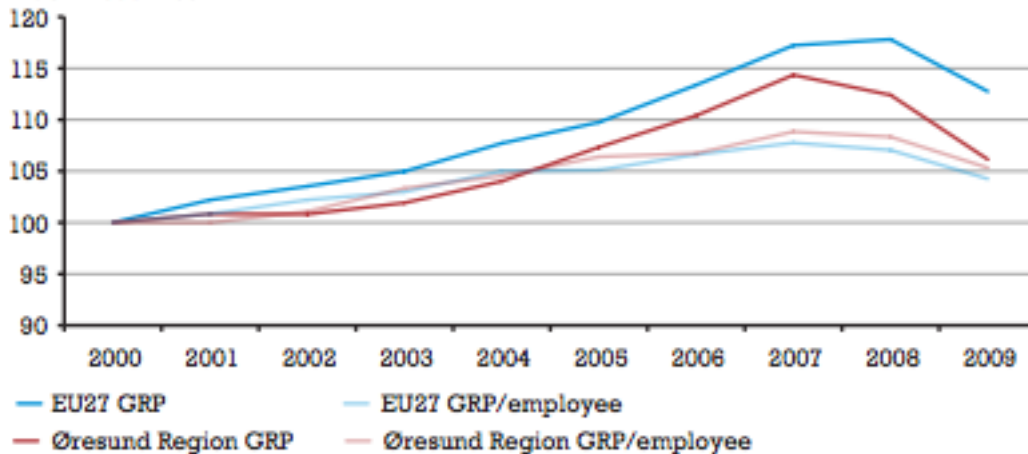
GRP per employee in the Øresund Region compared to EU27 (2000–2009) in EUR (2000 prices)

	2000	2002	2004	2006	2007	2008	2009	Growth 2000–09
EU-27	45,579	46,583	47,863	48,592	49,113	48,790	47,516	4.2%
Øresund Region DK	65,517	66,209	68,546	69,658	70,359	71,448	69,271	5.7%
Capital Region	68,873	69,403	72,161	73,976	74,938	76,131	74,021	7.5%
Region Zealand	56,200	57,416	58,690	57,989	57,908	58,423	55,878	-0.6%
Øresund Region SE	64,261	65,008	67,106	69,311	72,290	68,606	67,161	4.5%
Øresund Region	65,167	66,866	68,129	69,557	70,927	70,599	68,638	5.3%
Denmark	63,540	64,859	66,753	67,480	68,043	69,986	69,118	8.8%
Sweden	66,024	67,162	71,148	74,480	75,010	74,283	72,649	10.0%
Stockholm	79,274	80,993	87,712	92,698	94,286	93,057	94,498	19.2%
Helsinki	61,614	62,586	65,963	68,329	71,249	70,150	72,045	16.9%

Source: Statistics Denmark, Statistics Sweden and Region Scania. Calculations by Region Scania.

Development in GRP and GRP per employee in EU27 and the Øresund Region (2000–2009)

Index: 2000=100



Source: Statistics Denmark, Statistics Sweden and Region Scania. Calculations by Region Scania.

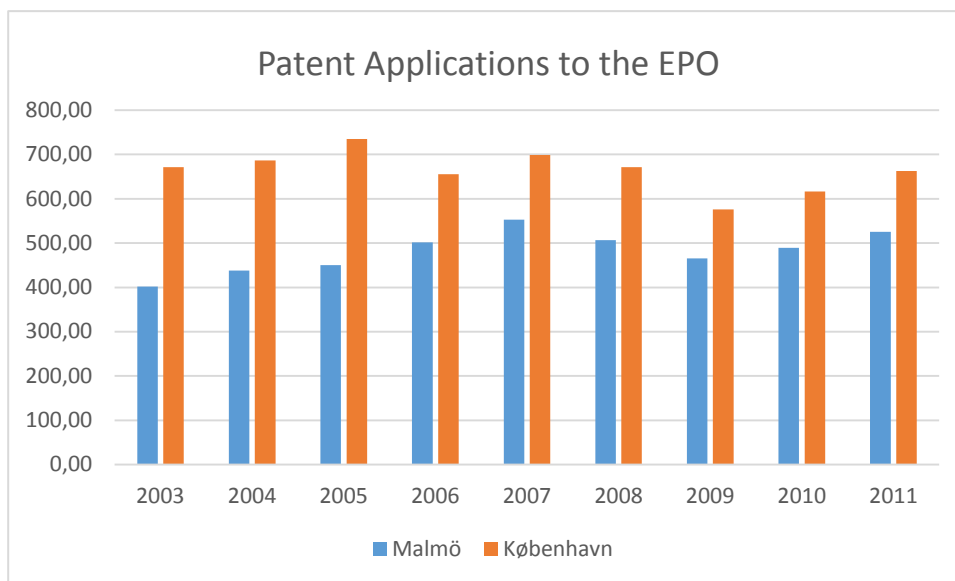
(Oresund Committee, 2012: 12-13)

In comparison with the other Nordic capital regions and the EU27 average have the Oresund region a much lower GDP and productivity growth. The total GDP growth was between 2000 and 2009, according to the GCS committee, 6 percent in Oresund, 13 percent in the average EU27, 24 percent in Helsinki and around 30 percent in the Stockholm area. In terms of productivity, the increase was 5.3 percent for Oresund, somewhat better than the EU27 average, yet still substantially lower than Stockholm with 19.2 percent and Helsinki, 16.9 percent (Oresund Committee, 2012: 12-13) A big part of the low numbers is due to the

negative numbers in Zealand, where both the level of productivity is going down, as well as the total GDP that fell with -3.9 percent (Oresund Committee, 2012: 12-13).

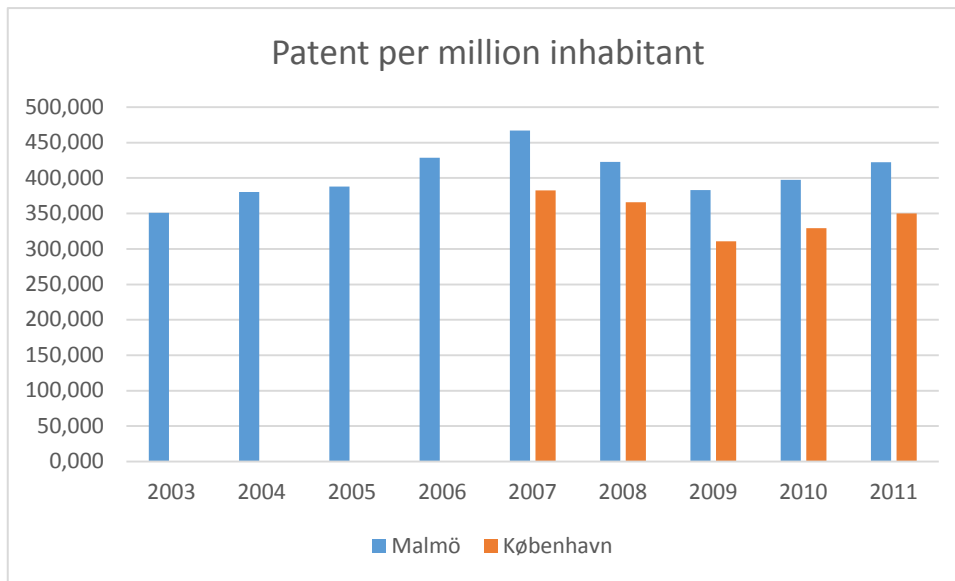
In these graphs it also becomes apparent that the housing crisis in 2006 also affected the Oresund's productivity given that the rest of the Nordic areas had an increase in productivity during these years.

6.2.5 Patent Applications to the European Patent Office



(Eurostat Database 2013)

6.2.6 Patent applications to the European Patent Office per inhabitant



(Eurostat Database 2013)

Looking at the number of applications to the European Patent Office, it becomes apparent that there is a high level of innovation in the region, especially in the Malmo area. Since, both Malmo and Copenhagen have a very high level of patent applications per million inhabitants as well. Unfortunately, the Eurostat only provides numbers from 2003, yet it there is still a clear increase in the Swedish statistics.

Looking at these numbers it also becomes more apparent that the regions are not that integrated when it comes to businesses, as they could be. The levels of GDP and productivity, there was till some corresponding data. Yet, when the Danish side in 2006, have a drop in applications from 735 in 2005 to 655 in 2006, only to increase slightly in 2007 to 698. The Swedish patent applications on the other hand, continue to increase and in 2013, Malmo was even ranks fourth among OECD metropolitan areas in terms of patent intensity (Nauwelaers et. al. 2013: 16).

6.3 Changes in the Indicators of the Vienna-Bratislava Region

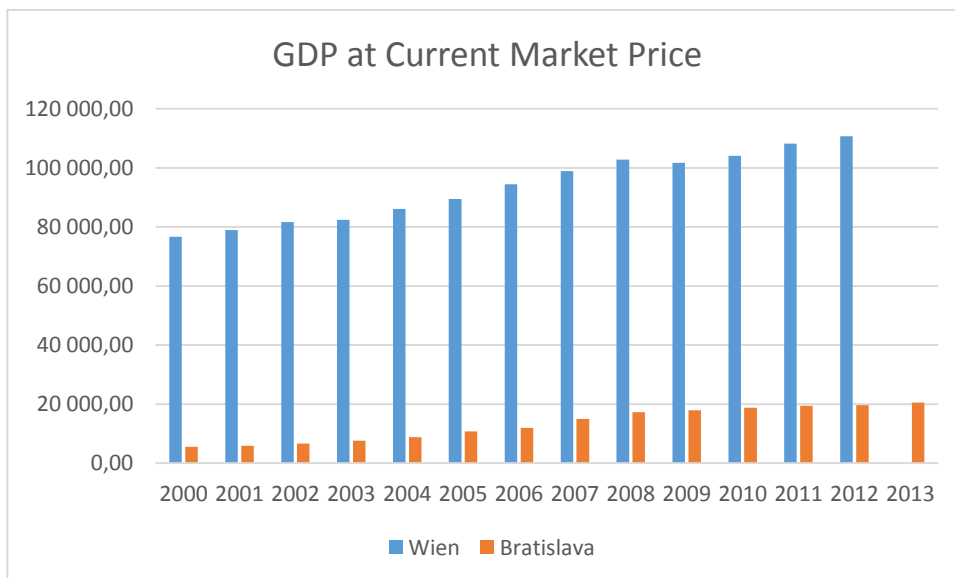
Unlike the Oresund region, the integration in the Vienna-Bratislava region have experiences some vary drastic changes the during the years of this study, 2000-2013. Thus, this it is the main critical events that will be used for the analysis of the productivity. During the beginning of the observed period, was

Slovakia a candidate country to the European Union, and became membership in 2004. A big step for a country with only ten years of independence. In 2007 the country was granted entry to the Schengen area, entering the European monetary union and the Euro zone in 2009. However, it was not until 2011 that all the citizens of the Vienna-Bratislava region were granted full admission to the Austrian labour market.

The years that will be analysed in this 2004, 2007, 2009 and 2011. These four events have brought the most changes in terms of integration in the region, removing obstacles for trade and mobility, and will thus be used for the analysis. All of these changes are structural changes within Slovakia and its relations to the surrounding world. Thus, it is important to remember that all the changes are not directly linked to increased cooperation within the region but also with the rest of Europe, although, all of these changes are directly affecting the levels of integration in the area.

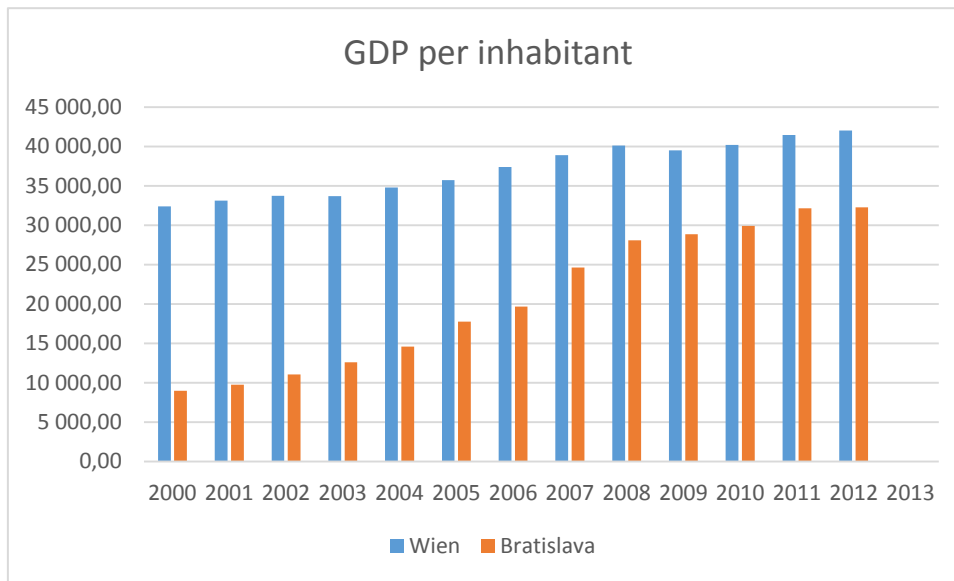
6.4 Productivity in the Vienna-Bratislava Region

6.4.1 Gross Domestic Product at Current Market Price



(Eurostat Database 2013)

6.4.2 Gross Domestic Product per Inhabitant



(Eurostat Database 2013)

When observing the levels of GDP two things can be noted, one in each graph. First of all, the huge differences in economic levels between the two cities. Yet, when the size of Vienna, also in terms of population is reduced and the calculation is made per inhabitant, Bratislava becomes the more impressive part with since the country have increased the GDP per inhabitant with 360 percent, from 2000 until 2012, while the increase in Vienna have ‘only’ been 29 percent. Despite the high increase of the economy in Bratislava, Vienna still have head start in economic terms, since Bratislava now is at the same amount of GDP per inhabitant, as Vienna had in 2000.

In terms of the critical events of integration in 2004, 2007, 2009 and 2011. The most apparent increase in GDP, comes with the Slovak admission to the European Union, with an increase in total GDP of 22 percent from 2004 to 2005, with a strong increase during the years that followed, also in Vienna there was a strong development with an increase of 7 percent from 2004 to 2005. Yet, during 2009 and 2011 the region was, just like the rest of the world, affected by the financial crisis. However, already in 2011 when the labour markets in the Vienna-Bratislava region was harmonised, the GDP once again was increasing.

6.4.3 Productivity - GDP / per Employed in Vienna and Bratislava

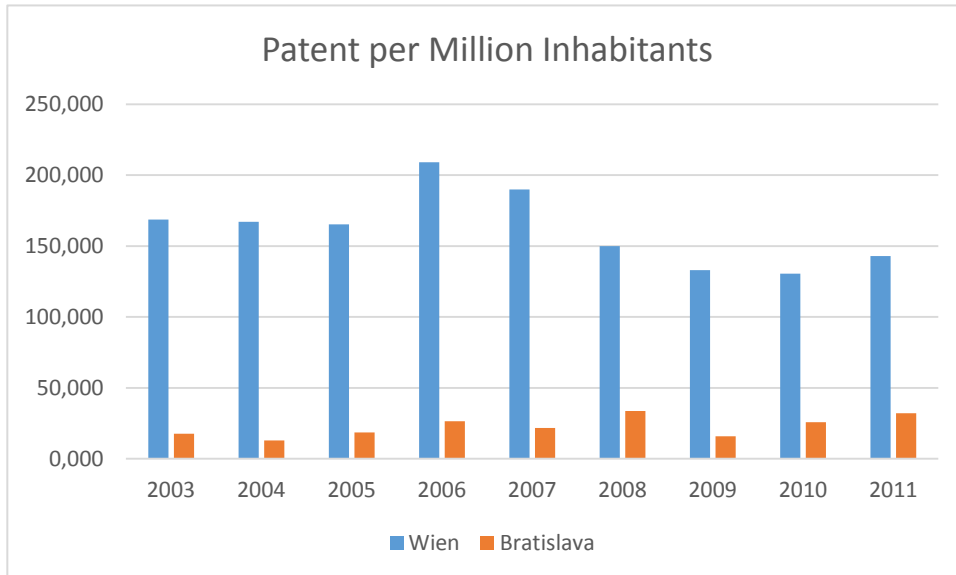


(Eurostat Database 2013)

The levels of productivity have, similar to the GDP increased during the observed period, yet here, the biggest increase is found in the productivity in Bratislava, between the years of 2006 and 2007, with an increase of 20 percent, followed by the 12 percent increase between 2003 and 2004. 2003-2004 was also the most 'productive' year for Vienna, increasing with 6 percent. What can also be observed, is the constant increase in levels of productivity in the Vienna region, during the financial crisis the country still was increasing its productivity levels. Given the amount of turbulence with the Euro in the years to follow, in comparison with Vienna, who experienced a little drop during these years. The total increase for Vienna was 28 percent, while Bratislava increased with an impressive number of 298 percent, between 2000 and 2012.

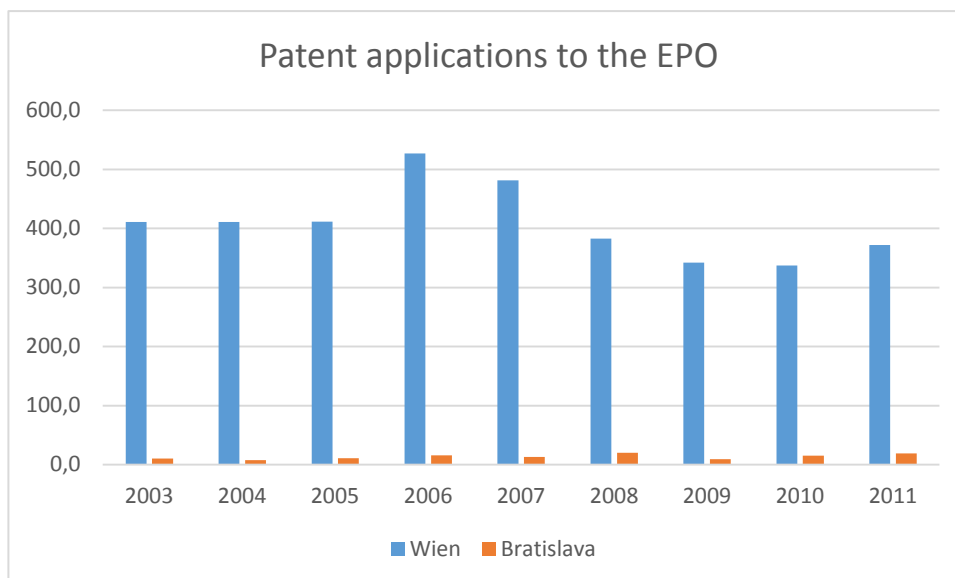
The economic development of Bratislava is to say the least, impressive. Generally, when looking at levels of productivity in the region there is not a specific year that stands out, the increase is quite constant from year to year. However, there is a considerable increase in the level of productivity, after the European Union membership in 2004. The economic implications of the generally market liberalisations in Slovakia, as well as the access to the European Single Market.

6.4.4 Patent applications to the European Patent Office



(Eurostat Database 2013)

6.4.5 Patent applications per inhabitant



(Eurostat Database 2013)

These are probably the graphs that most clearly show the difference in economic structure between the two regions. While the Slovak region is more

oriented towards production and manufacturing, the Austrian side of the borders are, despite the growth of the economy in Bratislava, still more innovative and focused on high skilled labour. Interesting is also that the amount of patent application also dropped in 2007, when Slovakia entered the Schengen area, indicating a possible migration aspect, that high skilled and innovative workers are seeking employment outside the region. However, given the increase the following year, the drop most likely had different explanations.

7 Analysis

Given the proportion of this study, not all of the empirical material will be analysed. Instead a selection will be made and most prominent and important findings will be scrutinized in this chapter, followed by a section on Generalisation that can be made. A final section on the Future of Schengen is also included at the end of this chapter.

7.1 The Development in Regional Integration and its Effect on the Productivity in Vienna- Bratislava

One of the main issues in the Vienna-Bratislava region and many other regions with similar structure, is that there is a mismatch of the functional economic area, geographical patterns and the political jurisdiction. Creating an environment where co-ordinate policy across the political borders are hard, if not impossible to achieve (OECD (2) 2003: 130). Since there are such different decision-making policies in the two states, the policy-making is on very different structural levels. One example is the spatial planning, that takes place on regional level in Austria, and on national level in Slovakia.

There is some hope of increasing institutional cooperation, since the cooperation that are launched have an increased amount of actors. Indicating an improvement, yet a full cooperation is still distant. There are several reasons for the lack of sustainable cross-border institutions in the Vienna-Bratislava region. One is the lack of active participation from the municipalities in Vienna and Bratislava, key players in integration and legislation (Jaššo 2009: 94). One of the reasons for this could be the Austrian overall fiscal system, that promotes competition between municipalities instead of cooperation, since it has an in-built disincentive for joint strategies (OECD (2) 2003: 127). Another issue is that the identification of a policy priorities is still at an early stage. Despite, the launch of a number of short term project aiming at increased integration (Jaššo 2009: 94). The issue with these projects is that they are short term, and not creating any long-term structure.

Despite the remarkable lack of institutional building in the Vienna-Bratislava region have the economic integration come a long way on it's own. The region lacks hull to pin the cooperation on, and there is no institutional memory when the cooperation only exists in short-term project sponsored with EU funding (OECD

(2) 2003: 138). With more relevant organisations and cross-border coordination the integration of the region could finally accelerating. Bratislava metropolitan region have, during the observed period, increased its GDP with impressive, 360 percent and productivity with around 300 percent. These economic improvements cannot solely be connected to increased integration in the Vienna-Bratislava region, but rather at the virtue of the European Union membership, and the access to the Single Market. Especially given that the Slovaks was not granted full access to the Austrian labour market until 2011.

Given that the infrastructure creating a functional region, is the Vienna-Bratislava far from being a cohesive entity. The outcome of prolonged institutional proximities and in terms of economic inequalities within the region may have severe economic factors, in terms of high competition from other more functional regions. But most importantly lead to social divisions, brain-drain and unfair competition in terms of cheap labour (OECD (2) 2003 52). In order to prevent this, the region needs to take the first steps for a joint cooperation.

7.2 The Development in Regional Integration and its Effect on the Productivity in the Oresund region

The Oresund region may be one of the best example of cross-border integration in Europe and the European Union prime example in the Interreg programme. (OECD (1) 2003:28). In terms of cross-border obstacles has the region, an advantage to many other cross-border regions, that are just starting their integration, since the region had many of the cooperatory structures before the missing link was built. Given the large investments made by national governments on both side of the Oresund, the integration of the region was a high priority.

Yet, the region has, after the construction of the Oresund bridge, had some difficulties in picking up the regional economy at least in comparison to other Nordic cities. Some researchers have analysed potential reasons for these results, one reason is often pointed out as labour force shortage and ageing population (Nauwelaers et. al. 2013: 7). Given the high level of unemployment in the region, the mismatch on the labour market becomes apparent. Employment levels have also proven in previous studies to have connections to the level of productivity (see. section 2.2.1). Since over 90 percent of the commuting across the bridge is from Sweden to Denmark is there a considerable amount of resources staying in Copenhagen, and that are moving from Scania to Copenhagen. Thus, the Scania region may potentially be facing a somewhat similar brain-drain as Bratislava, and other regions that are allocated on the push-side of the border. This can also be described as a mini-version of the globalisation and increasing competition between European cities (Jaššo 2007: 359).

7.3 Analysis of the Development in Regional Integration and its Effect on the Productivity

The way to operationalise the productivity in this study as based on integration, creates empirical findings rather on a macro than micro level, something that also applies to the analysis. Yet, the intention of this study was not to do an in-depth research investigate all aspects of productivity in terms of cross-border integration. Instead this is a theory developing study, focusing on finding possible trend in the level of productivity in cross-border regions and investigate their connections to integration.

The study of cross-border region is a multi-faceted area, since it studies areas with a multitude of influences, not only in terms of culture, but also in terms of business and politics. The wide variations in scale location, and relevant for this study, integration and productivity, makes them interesting to study, yet also tough to form and develop theories regarding.

What is interesting with the study of cross-border regions, is that the exact same reasons for why they are difficult to study is also in many cases, the same as why they are difficult to integrate. The lack of cohesion becomes more apparent, and in the regions that have a more well developed in terms of cooperation, such as the Oresund region. More data are available, yet when the European Union funding runs out, so does the cooperation. As in the case of Orestat, where the statistics have not been updated since 2014. An issue that many researchers also points out as a problem throughout many cooperation, that when the money runs out, the project is lost and what would happen, generally, if the funding from the Interreg were cut, would national and regional government continue with the integration? (Hall 2008: 427). Making it even more important to research the benefits of integration. These issues have also caused one of the bigger dilemmas of this study, the reliability. Given the lack of monitoring of commuters in the Vienna-Bratislava region, it is difficult to say whether or not the integration and cooperation have increased for regular citizens, yet it is safe to assume that the economic integration in the region have increased. However, it is difficult to claim at what level or its implications.

The issue of measuring the level of integration is a reoccurring difficulty in the scope of regional integration, thus making it difficult to create a full European cross-border SIRI. Given the drastic changes in the levels of productivity in the Bratislava area, little have happened in many other areas.

One interesting such an obstacle of integration is the language barriers. In the Oresund region there is a stronger sense of being ‘one region’, than in the Vienna-Bratislava region, this is particularly showed in the studies made by Eurobarometer. Where the Oresund-Skagerrak-Kattegat region, saw more less border obstacles, as well as had a generally more positive attitude towards their neighbours. This may be linked to language barriers, something that the Oresund region also is suffering from, 50 percent saw this as an obstacle. Yet, is far from the levels of the Vienna-Bratislava region, where 72 percent saw this as the main problem (Eurobarometer (1-2) 2015). If the labour allocation in these regions is going to become functional all throughout of the region, this is one of the most difficult to come to terms with, since more investments are required. Possible only if for example; enough people become multi-lingual, or if the educational policies in the region are changes. Thus, such an investment is more long-term, rather than paying for a ferry to operate between Bratislava and Vienna.

7.4 Generalisation

There are some generalisations that can be made from this study in terms of productivity in a cross-border setting. Many of the cross-border obstacles that the Vienna-Bratislava and Oresund region are facing, can be said to be quite symptomatic for cross-border regions. The given the magnitude of this study there can be a number of generalisation made, these are some of the most significant findings.

One of the most important issues in both of these regions, that is also a symptom for many cross-border regions. Is that some regions exist in the ‘shade’ of the bigger part. In the case of Oresund, Malmo and Zealand are struggling with high unemployment (Malmo) and a decreasing GRP (Zealand). In the case of Vienna-Bratislava the poor countryside of Slovakia and Austria are shaded, partly by the sheer size of Vienna. But also by the developments in Bratislava, who in turn are shaded by the high economic levels of Vienna.

Both of the regions also have a functional transportation system, a key element in terms of integration, lowering physical proximity. However, this seems to have limited implications on the level of integration. Since the amount of commuters till is relatively low, illustrating the importance to have an attractive labour market worth commuting to.

The for the level of regionness, not even Swedish and Danish are similar enough, since so many believe that language is an obstacle for integration. Thus, the Vienna-Bratislava region, and many others in Europe have a high barrier to overcome, not only in terms of culture and administration in a foreign language.

7.5 The Future of Schengen

As this study is written, two of the countries in the thesis study, Sweden and Austria, have imposed temporary internal Schengen borders as a consequence of the the high levels of refugees passing through the borders and applying for asylum. On May the 4th, the European Commission proposed to the Council that these controls could be prolonged no longer then six more months, until the end of 2016 (European Commission, 2016). While this study has not taken these measures into consideration, studies made by the South Sweden Chamber of Commerce and Industry already show that the controls will have huge effects on the region, taking it back ten years in economic development (Sydsvenska handelskammaren 2016). This shows the importance of cross-border cooperation and the cost of not cooperating.

Many experts also point out the importance of the European Union in the integration process of the European cross-border regions (Hall 2008: 433). A main reason is the large monetary support that are directed from the European Commission, yet also in terms of harmonisation of trade and labour markets. It is important to also acknowledge that national governments have an important role to play in the integration, especially when the temporary borders are lifted. They have a responsibility to remove unnecessary cross-border obstacles on all levels, so that these regions can start to catch up again.

8 Conclusion

The aim of this study was separated into three parts, the theoretical aim of investigating a relationship between regional integration and conceptualising the productivity in a cross-border setting, as well as develop the operationalization on regional integration. The SIRI was divided into four categories of indicators; Cultural and Social Integration, Institutional and Policy Integration, Economic and Industrial Integration and Infrastructural and Spatial Integration.

The most similar cases in form of the Oresund region and the Vienna-Bratislava, was empirically analysed from the basis of the SIRI. The critical events of the integration process were then applied to the levels in productivity, measured by GDP, productivity and number of patent applications.

The main findings of the analysis are that both the Oresund and Vienna-Bratislava region are suffering from similar issues, in terms of economic development. Both of the smaller cities in terms of population and economy are struggling with pull-factors from Vienna and Copenhagen. Both Vienna and Copenhagen compete with higher salaries and 'high skilled labour', risking brain-drain in the urban areas in both cross-border regions. Yet, the smaller cities need to take advantage of the benefits of freeriding on its larger neighbour, in terms of positioning themselves as a regional entity, cooperation is necessary to evolve. Especially for the smaller municipalities and cities. One example is the cooperation in the Oresund region, using the stronger brand to market the whole region in the Greater Copenhagen and Skåne Region.

However, in terms of productivity have the two regions very different result. While Malmo and Copenhagen are struggling to keep up in the Nordic competition is Bratislava booming, yet only partly with help from Vienna. Instead it is mainly the entrance to the European Union that has provided the most increase in productivity.

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10 Appendix

Dataset: Metropolitan areas															
Variables	Unemployment as a share of the labour force (%)														
Unit	Percentage														
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Metropolitan areas															
AT001: Vienna	4,77	4,83	5,82	6,24	7,2	7,37	7,05	6,57	5,51	6,31	6,02	5,99	6,62	7,03	..
DK001: Copenhagen	..	..	..	..	..	..	..	4,1	3,55	5,96	7,72	8,1	7,92	7,24	6,88
SE003: Malmö	7,42	6,25	6,18	6,72	7,41	8,84	8,39	7,04	7,61	8,61	8,62	9,12	9,4	9,89	10,08
SK001: Bratislava	8,37	9,58	9,62	7,68	8,74	5,85	4,91	4,46	3,91	5,25	6,88	6,36	6,38	7,13	6,81

Data extracted on 9 May 2016 15:06 UTC (GMT) from OECD.Stat

Gross domestic product (GDP) at current market prices [met_10r_3gdp]

Last update 02.10.15

Extracted on 13.05.16

Source of data Eurostat

UNIT Euro per inhabitant

METROREG/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
København	38 522,15	39 680,83	40 243,02	41 204,76	43 691,02	46 741,45	47 770,39	49 275,55	50 651,52	49 209,80	52 465,65	52 060,31	53 264,00	53 678,10
Wien	32 390,53	33 114,40	33 727,17	33 716,71	34 816,22	35 738,82	37 401,16	38 896,62	40 143,32	39 505,95	40 187,59	41 486,66	42 049,38	:
Bratislava	8 988,57	9 776,53	11 069,47	12 601,98	14 611,15	17 781,13	19 695,79	24 628,71	28 102,99	28 877,45	29 903,52	32 150,06	32 281,55	:
Malmö	28 689,70	27 173,31	28 677,16	29 295,72	30 095,98	30 615,67	32 442,02	35 730,21	33 342,43	28 672,35	33 860,09	36 337,55	37 862,45	:

Special value:

: not available

UNIT Million euro

METROREG/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
København	68 987,32	71 409,56	72 694,37	74 598,41	79 245,31	85 034,20	87 117,76	90 172,64	93 387,63	91 661,85	98 775,66	98 962,60	102 201,89	104 010,35
Wien	76 662,35	78 892,34	81 658,94	82 417,68	86 053,09	89 422,26	94 465,75	98 897,52	102 754,32	101 726,20	104 112,77	108 230,56	110 703,85	:
Bratislava	5 547,12	5 856,38	6 630,73	7 559,23	8 770,39	10 711,59	11 913,92	14 998,57	17 246,36	17 890,13	18 710,98	19 392,99	19 674,26	20 470,87
Malmö	32 333,65	30 787,36	32 720,64	33 661,53	34 819,11	35 665,67	38 182,16	42 590,88	40 242,57	35 064,39	41 885,38	45 350,22	47 632,96	:

Special value:

: not available

UNIT Persons

WSTATUS Employed persons

NACE_R2 Total - All NACE activities

METROREG/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
København	994,00	1 012,00	1 008,00	1 003,00	1 004,00	1 027,00	1 046,00	1 066,00	1 074,00	1 057,00	1 035,00	1 047,00	1 047,00	1 050,00
Wien	1 233,40	1 239,50	1 241,80	1 242,60	1 242,50	1 254,10	1 283,10	1 306,90	1 336,90	1 333,90	1 348,10	1 372,10	1 394,40	:
Bratislava	362,79	379,13	372,03	372,30	380,43	404,96	401,47	417,82	429,43	443,65	421,46	424,39	430,75	:
Malmö	519,00	531,00	531,00	526,00	525,00	529,00	547,00	562,00	562,00	551,00	559,00	571,00	572,00	:

Special value:

: not available

UNIT Productivity

Calculated GDP/Employed persons

METROREG/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
København	69,40374245	70,562 80632	72,117 43056	74,375 28415	78,929 59163	82,798 63681	83,286 57744	84,589 71857	86,953 10056	86,718 87417	95,435 42029	94,520 15282	97,61 40305	99,05 74761
Malmö	62,29990366	57,979 96234	61,620 79096	63,995 30418	66,322 11429	67,420 92628	69,802 85192	75,784 48399	71,605 99644	63,637 7314	74,929 12343	79,422 45184	83,27 44055	#VÄR DEFE
Wien	62,15530242	63,648 51956	65,758 52794	66,326 79865	69,258 02012	71,303 93111	73,623 06134	75,673 36445	76,860 13913	76,262 23855	77,229 26341	78,879 49858	79,39 17455	#VÄR DEFE
Bratislava	15,29016787	15,446 89157	17,823 10566	20,304 13645	23,053 88639	26,450 98281	29,675 74165	35,897 20454	40,161 0507	40,324 87321	44,395 62473	45,696 15212	45,67 44283	#VÄR DEFE

Patent applications to the EPO by priority year by metropolitan regions [pat_ep_mtof]

Last update 29.04.16
 Extracted on 13.05.16
 Source of data Eurostat
 UNIT Number

METROREG/TIME	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Praha	30,01	41,8	41,48	57,69	70,15	72,17	47,66	64,47	64,79	55,26
Wien	410,8	410,94	411,19	526,61	481,56	382,87	341,92	337,35	371,8	326,85
Bratislava	10,57	7,69	11,04	15,7	12,78	19,91	9,44	15,34	19,25	5,77
Malmö	401,73	438,31	450,23	501,29	553,09	506,91	465,49	489,37	525,33	503,09
København	671,23	686,44	735,23	655,25	698,62	671,41	575,98	616,84	663,06	449,69

Special value:
 : not available

UNIT Per million inhabitants

METROREG/TIME	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
København	:	:	:	:	382,63 5	365,81 7	310,79 8	329,40 5	350,26 8	235,48 8
Wien	168,81 3	167,22 7	165,23	209,17	190,01 4	150,02 8	133,12 2	130,61	142,97 4	124,74 7
Bratislava	17,714	12,944	18,625	26,507	21,586	33,585	15,866	25,652	32,087	9,513
Malmö	350,82 8	380,24 7	387,82 2	428,64 9	466,94	422,65 1	383,19 6	397,51 9	422,51 9	401,53

UNIT

Nominal GDP in billion euro

METROREG/TIME	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Praha	1,039	1,328	1,154	1,397	1,496	1,293	0,935	1,193	1,167	:
København	9,223	8,952	8,998	7,832	8,056	7,528	6,619	6,479	6,924	:
Wien	5,139	4,937	4,745	5,733	4,995	3,838	3,488	3,329	3,531	:
Bratislava	1,43	0,898	1,055	1,349	0,874	1,182	0,538	0,838	1,012	:
Stockholm	7,221	7,83	7,996	8,719	9,224	10,075	9,755	9,538	8,062	:
Malmö	12,49	13,142	13,181	13,711	13,73	13,23	13,835	12,177	11,978	:

Special value:

: not available

UNIT

Per million of active population

METROREG/TIME	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Praha	24,954	35,008	34,042	46,599	56,12	56,666	36,382	48,922	49,762	41,788
København	:	:	:	:	685,66 1	649,33 3	562,86 5	596,78 8	638,04 8	432,89 4
Wien	342,76 2	351,65 2	342,06	426,26 7	384,20 3	304,56 6	268,29 9	259,6	285,07 9	246,54 9
Bratislava	31,761	23,296	33,364	47,175	37,677	57,693	27,126	44,775	57,704	17,061
Stockholm	557,38 6	642,34 9	660,59 9	751,35 8	839,69 6	885,03 7	775,14	865,01 3	804,70 1	699,12 4
Malmö	695,63 6	755,96 8	756,30 8	830,91 3	897,14 5	795,77 7	732,70 9	756,60 2	804,73 3	766,78 9

Special value:

: not available